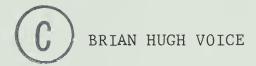THE UNIVERSITY OF ALBERTA

A STUDY OF THE AWARENESS OF FIFTH GRADE STUDENTS

OF CONTEXT CLUES IN SELECTED BASAL READING MATERIAL

by

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A THESIS

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The undersigned certify that they have read, and recommend
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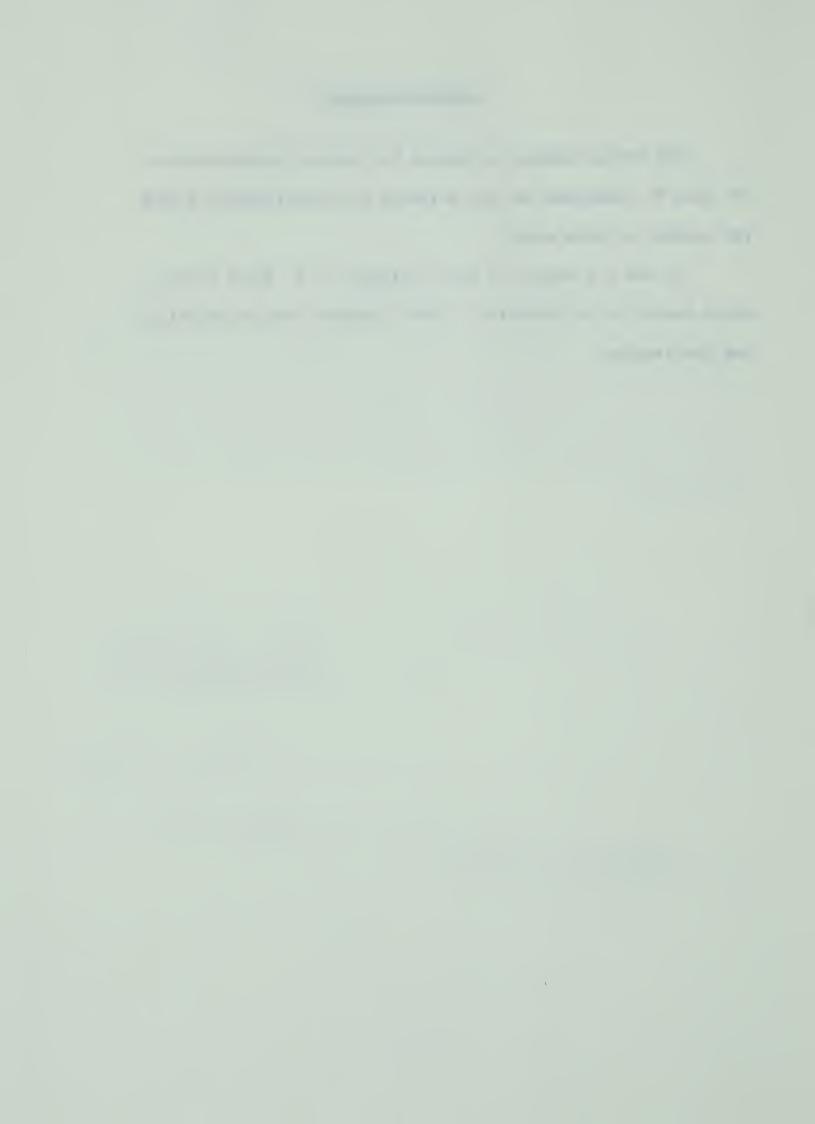of Education.

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ABSTRACT

The purpose of this study was to determine the awareness of
fifth grade students of context clues in selected basal reading
materials. This awareness was determined by the ability to identify
correctly a word represented by a simulated word in selected basal
reading materials and by the ability to verbalize about which clues
in the verbal context assisted in the correct identification of a
word represented by a simulated word in particular contextual
situations.

The students were randomly selected from four schools
representative of four different socio-economic areas as determined
by school system officials. Ten students were selected from each
school yielding a test sample of forty.

The variables selected for statistical control in this study
were reading ability, mental ability, listening ability, chronological
age, and sex. The data for the first three variables were collected
through the administration of the following tests: STEP Reading,
Form 4A, SCAT, Level 5, Form 4A, and STEP Listening, Form 4A. The
remaining data were collected from the room attendance registers.
A measure of control for socio-economic status was achieved through
the stratification of the student sample.

To assess the ability of the students to verbally identify
correctly a word represented by a simulated word and the ability to
verbalize about which clues in the context assisted the students in
making their identification, the Context Clues Test was administered

to each child by the researcher. This test was constructed by the researcher using material selected from <u>Crossroads</u>, the fifth grade reader in the Harper and Row Basic Reading Program, and following the procedure used by Ames.

Analysis of the data indicated that the students selected for this study were not well aware of context clues in selected basal reading material. Listening ability, reading ability, and verbal ability were identified as being significantly positively correlated with the awareness of context clues in selected basal reading materials. Listening ability and reading ability were also identified as the most powerful predictors of the awareness of context clues in selected basal reading materials.

The students in this study used similar context clues in both correct and incorrect identifications. The students appeared to examine the immediate sentence context for clues to assist them in the identification of a word represented by a simulated word. Analysis of the incorrect responses also indicated that few of these could be considered as reasonable, although they were, for the most part, of the same form class as the word to be identified. The use of sentence sense as a clue to the identification of a word represented by a simulated word appeared to result in a higher percentage of correct identifications than incorrect identifications.

A summary of the study, conclusions formulated as a result of the findings, and implications of the results were also presented.
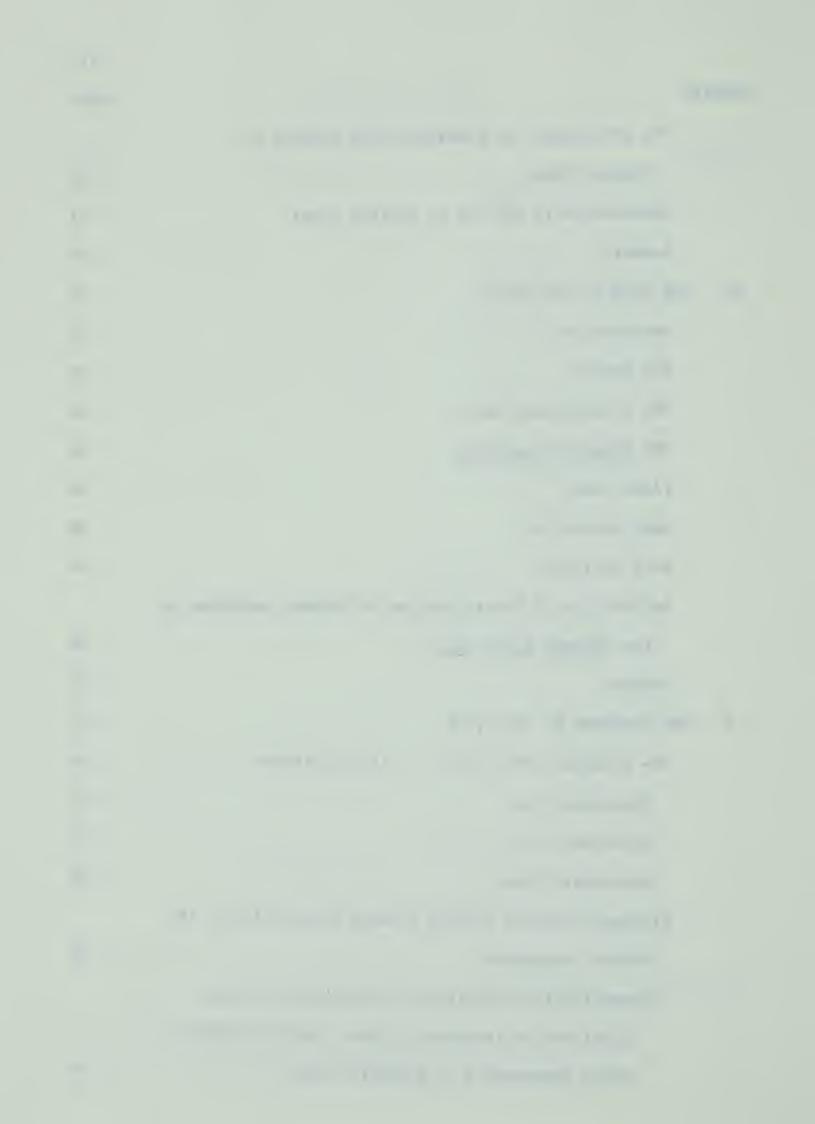
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CHAPTER I

OVERVIEW OF THE STUDY

I. INTRODUCTION

Educators encourage students to use context clues as one
of the means of developing independence in word recognition. It
is not uncommon for a teacher to request a pupil having difficulty
in determining the meaning of a particular word to refer to the
remainder of the sentence, or paragraph, or the entire discourse
for assistance. Recognized experts in the field of reading also
support teachers when they emphasize the importance of the context
clue as an aid to word perception. Gray (25) suggests that context
clues are possibly the most important singular aid to word
perception. He suggests that regardless of the speed with which a
word is identified, the student must make sure it makes sense in
the sentence.

Wheat states that "a person never reaches maturity in reading
until he relies on the contribution of context to recognition quite
as much as he depends on the appearance of words." (51: 179) He
suggests that no reader ever approaches independence as long as his
recognition is tied down to the appearance of individual words or
even to the appearances and meanings of individual words. Tinker
and McCullough (47: 164) also suggest that the use of context clues
derived from meanings of known words in a sentence or paragraph is
one of the more important aids in word perception. As a pupil gains

proficiency in reading, he depends more and more upon clues in the verbal context to recognize a relatively unfamiliar word and to infer its exact meaning. Russell (44) suggests that the use of context clues has the great advantage of reliance upon meaning. Leary (33) suggests that if we train a child to anticipate probable meaning, to infer an unknown word from its total context, to skip a word to search in the context for a description or explanation that will identify the word, he will have acquired the most important single aid to word recognition. Finally, Bond and Wagner (6) continue the support of context clues in word perception when they suggest that their use limits the choice to the few that would fit the meaning of the passage being read.

It appears then that authorities and researchers in the field of reading recognize the importance of context clues as a major aid to word perception. While these authorities cite the importance of context clues in word recognition, little research in this area of reading has been reported. McCullough states:

> We recognize that the good reader not only observes words
> carefully if necessary, but also thinks of the relationship
> of those words to each other and to the sense of the whole.
> This second attribute of a good reader is still an area of
> considerable ignorance among us. (36: 225)

II. PURPOSE OF THE STUDY

With the importance of context clues as an aid to word perception it is evident that educators must know how children at various age and grade levels use context clues, which context clues

students at the various age and grade levels are able to utilize, if and how the basic instructional materials provide for a variety of experiences in utilizing context clues in word perception.

The purpose of this study was to investigate the ability of students in the fifth grade to verbally identify correctly a word represented by a simulated word in selected basal reading materials and to assess their ability to verbalize about which clues in the verbal context assisted them in making the identification. The ability to verbally identify correctly a word represented by a simulated word and the ability to verbalize about which clues in the verbal context assisted them in making the identification were considered to constitute the awareness of context clues in the selected reading material.

III. BACKGROUND OF THE STUDY

Little research concerning the significance of the context clue in word perception has been reported. Artley (4) in 1943 developed a ten point classification scheme which appears to be more of a guide for systematically teaching various context clues than a way of determining which context clues students are able to identify and use. Artley's scheme seems to be the result of an analysis of the variety of reading materials that normally confront the student.

McCullough (37) in 1945 reported her classification scheme developed from the responses of college freshmen on cloze-type tests. Following evaluation of the tests, students discussed and attempted to analyze their errors. It is from this discussion that McCullough developed her scheme.

Ames (2), in his doctoral study of 1965, developed a fourteen point classification scheme based on the subject's identification of particular context clues used in particular contextual situations. His scheme is the only one reported whereby the subjects identified the context clues used.

In this study the procedure used by Ames was followed in preparing the Context Clues Test (Appendix A) and in recording the responses of students in their attempts to identify words represented by simulated words in selected basal reading materials. Their correct responses were classified according to his scheme. An introspective technique was used to determine the rationale for particular choices in particular contextual situations.

For his study Ames used twenty doctoral candidates in education as a sample population. Since this population may be considered as rather select, it became a concern of this study whether or not Ames' classification scheme would be appropriate for use with grade five students in a large city school system.

IV. QUESTIONS TO BE ANSWERED

The problem of identification of context clues prompted these questions:

1. Are students at the fifth grade level able to verbally identify correctly a word represented by a simulated word in a particular printed contextual situation?

2. Are students at the fifth grade level able to verbalize about

which clues in the printed verbal context assisted them in the correct identification of a word represented by a simulated word in a particular printed contextual situation?

3. Is there a relationship between the reading ability, mental ability, chronological age, sex, listening ability and the ability of fifth grade students to verbalize about which clues in the printed verbal context assisted them in the correct identification of a word represented by a simulated word in a particular printed contextual situation?

V. HYPOTHESES

From the questions posed, the following hypotheses were formulated for testing in this study:

1. Students at the fifth grade level are not able to verbally identify correctly a word represented by a simulated word in a particular printed contextual situation.

2. Students at the fifth grade level are not able to verbalize about which clues in the printed verbal context assisted them in the correct identification of a word represented by a simulated word in a particular printed contextual situation.

3. There is no relationship between the reading ability, mental ability, chronological age, sex, listening ability and the ability of fifth grade students to verbalize about which clues in the printed verbal context assisted them in the correct identification of a word represented by a simulated word in a particular printed contextual situation.

VI. DEFINITIONS

Context. The context is the part or parts of a written discourse surrounding a word that may assist in determining the meaning of that word in that discourse. This study pays greater attention to the linguistic context, deemphasizing the social and psychological contexts.

Context clue. The context clue is the particular element or elements in the printed context which assist in the identification of a word represented by a simulated word in a particular printed contextual situation.

Introspective technique. The introspective technique is the procedure whereby the subject is asked orally by the researcher to identify the contextual word clue(s) used in the identification of a word represented by a simulated word in a printed contextual situation.

VII. DESIGN OF THE STUDY

To ensure a diversity of socio-economic background, administrative officials of the Edmonton Public School system were asked to assign the researcher two fifth grade classes from each of four socio-economic categories: (1) professional, (2) highly skilled, (3) semi-skilled, and (4) unskilled. Using a table of random numbers, five students from each of the eight classes were selected, yielding a test sample of forty from a test population of approximately two hundred and forty students.

The following tests were administered in random order by the researcher to the group of ten students selected from each of the four schools:

1. School and College Ability Test, Level 5, Form A. (Appendix B)

2. <u>Sequential</u> <u>Tests</u> <u>of</u> <u>Educational</u> <u>Progress</u>, <u>Reading</u>, Form 4A.

   (Appendix B)

3. <u>Sequential</u> <u>Tests</u> <u>of</u> <u>Educational</u> <u>Progress</u>, <u>Listening</u>, Form 4A.

   (Appendix B)

Also administered individually to each student was a <u>Context</u> <u>Clues</u>
<u>Test</u> (Appendix A) designed by the researcher. The student reponses
were tape recorded and transcribed.

The following data were collected from the room attendance
registers: (1) sex of child, and (2) date of birth.

VIII. DATA ANALYSIS

The question of student ability to identify words represented
by simulated words in particular contextual situations was answered
by noting the number of accurate identifications of words represented
by simulated words.

The question concerning the ability of fifth grade students
to verbalize about which clues in the verbal context assisted them in
the identification of a word represented by a simulated word in a
particular contextual situation was answered by noting the number of
verbalizations that were classifiable within the Ames scheme after
correct identification of the word represented by the simulated word.

Two statistical procedures were applied to assess the relation-
ship between the selected variables and the ability to use a number
of contextual clues:

1. The Pearson Product Moment Coefficient of Correlation.

2. The Stepwise Multiple Linear Regression.

In order to gain more information concerning how fifth grade students use context clues their responses were analyzed in a variety of ways. This analysis included: an examination of the use of the context clues specified in the categories of the Ames scheme by students in their correct and incorrect identifications of words represented by simulated words, the form class agreement between the word represented by a simulated word and the incorrect identifications of the students, and the location in the context of words specified as clues by the students. As well, the number of incorrect responses that could be considered as reasonable substitutions and the use of sentence sense as a clue were examined.

IX. LIMITATIONS OF THE STUDY

The ability to generalize the findings is limited in that the material of only one author was used in the Context Clues Test. Authors may vary in their use of language constructions and thus offer additional assistance to children in determining word meaning.

The construction of the simulated words presents at least two limitations. Firstly, no provision was made for the $\emptyset$ allomorph. The researcher was aware of the power of the $\emptyset$ allomorph but could not determine a more suitable way to provide for it than simply not providing for it. Secondly, the simulated words may have inadvertently triggered an association in the mind of the student which may have resulted in a correct or incorrect response.

X. SIGNIFICANCE OF THE STUDY

This study was considered pertinent at the fifth grade level for the following reasons. Firstly, the present emphasis on reading instruction during the first, second, and third grades is on the skills of word perception using phonics and structural analysis, with no sequential developmental program in the use of context clues. Therefore, a study concerned with the role of context clues as an aid to word perception appeared inappropriate at these grade levels. Secondly, during the fourth, fifth, and sixth grades the amount of reading in the content fields, for example the subject areas of social studies and science, increases tremendously in quantity and quality. Therefore, the ability to use context clues becomes increasingly important. Thirdly, as McCullough points out:

> . . . it does not stand to reason that this reading skill
> can spring into full bloom after postponement until junior
> and senior high school levels, any more than that word form
> analysis can safely remain a teacher's trade secret until
> the high school years. (37: 4)

A knowledge of which context clues are used by students at this grade level may be of value to teachers of the grade level and authors writing for the grade level. If we have some indication of which context clues are readily identified by students we can provide in their reading materials opportunity for reinforcement and extension of the ability to use a number of context clues.

XI. ORGANIZATION OF THE THESIS

The remainder of the study is organized as follows:

Chapter II. Theoretical Background of the Study. This chapter reviews literature concerning the role of context in the problem of meaning, the role of context in the reading process, and the four main classes of words.

Chapter III. Related Literature. This chapter reviews research concerned with the role of context in the determination of word meaning and the development of classification schemes of context clues as formulated by various authorities. Because of its importance to this investigation, the formulation of the Ames scheme is reported in detail.

Chapter IV. The Plan of the Study. This chapter describes the student sample selected for participation in the study, the standardized tests administered and the construction of the Context Clues Test. As well, the findings of the pilot study, the collection and analysis of the data, and the reliability of the classification of the student responses within the Ames scheme are presented.

Chapter V. The Findings of the Study. This chapter presents student achievement on the standardized tests and describes and discusses the findings of the study with respect to the hypotheses. The findings revealed by the examination of the student responses undertaken to gain more information concerning how these students used context clues are presented.

Chapter VI. Summary, Conclusions, Implications, and Suggestions for Further Research. This chapter provides a summary of the study,

its main findings, and the conclusions formulated as a result of these findings. The implications of the findings to reading instruction are discussed. Suggestions for further research are provided.

XII. SUMMARY

This chapter provides a brief overview of the study. Authorities in the field of reading stress the importance of context clues as one of the means of word perception. Little research in the area of context clues as an aid to word perception has been reported. Of the three classification schemes identified, the Ames scheme has been selected for use in this study because it was formulated entirely from the context clues identified by his sample population. A concern of this study was the awareness of fifth grade students of context clues in selected basal reading materials.

CHAPTER II

THEORETICAL BACKGROUND OF THE STUDY

I. INTRODUCTION

The purpose of this chapter is to review selected readings
which provide a theoretical basis for this study. Firstly, a brief
discussion of the problem of meaning from the viewpoint of the
disciplines of philosophy, psychology, and linguistics is presented.
Then the role of context, social or cultural, psychological, and
linguistic, in relation to word meaning and to the process of reading
and reading comprehension is related. Finally, the linguistic
concepts of lexical and structural meaning, the four main classes
of words, and inflectional endings are explained with emphasis on
their relatedness to the role of context in the process of reading.

II. THE PROBLEM OF MEANING

The material presented here is intended to relate the role of
context to the problem of meaning as viewed by the disciplines of
philosophy, psychology, and linguistics. Because of the extensiveness
of material on meaning provided by these three disciplines, that which
is presented must be considered a very brief discussion. However,
the selected materials do serve to exemplify that these disciplines
acknowledge the role of context in the acquisition of word meaning.

The meaning of meaning and the acquisition of meaning have been
concerns of scholars since at least the beginning of recorded history.

In Plato's dialogue, Cratylus, one learns of a fundamental question being raised in the fifth century B.C. concerning how words in particular, and language in general, acquired meaning. It seems that two positions prevailed, that is, language has meaning arbitrarily, or language has some natural connection with the things it is used to discuss. (14: 73) To say that language has meaning arbitrarily means that meaning or meanings were attributed to a sign according to its use by a speaker. To say that language has some natural connection with the thing it is used to discuss means that the meaning of a particular sign and the sign itself are one. The meaning becomes a stable property of the sign.

Aristotle in his writings appeared to restrict himself to a referential definition of meaning, that is, language has some natural connection with the things it is used to discuss. (14: 81) Although this belief that words by and in themselves have meaning was once universal, we now accept that words mean nothing by themselves and it is only when a thinker makes use of them that they stand for anything or have meaning. (14: 10)

Ogden and Richards (40) in discussing the relationship between thoughts, words, and things, specified three factors, symbol, thought or reference, and referent, involved whenever any statement is made or understood. They provided a diagram (Figure 1) intended to illustrate the relationship between these factors in the act of communication. In this diagram the factors involved are placed at the corners of the triangle while the sides represent the relations which hold between them.

Thought or Reference

(Symbolizes a causal relation)

(Refers to other causal relations)

Symbol   Referent

(Stands for an imputed relation)

FIGURE 1

RELATION BETWEEN SYMBOL, THOUGHT, AND REFERENT   (40: 11)

Ogden and Richards suggest that causal relationships exist between a thought and a symbol. The symbolism employed when a person speaks is caused partly by the reference being made and partly by psychological and social factors, that is, his purpose for making the reference and the proposed effect of his symbols on other people and his own attitude. When a person hears or reads what is said, then, the symbols cause him to perform an act of reference and to assume an attitude which will be more or less similar to the attitude and act of the speaker or author. Between the thought and referent there is also a relationship, direct or indirect, in which other sign situations intervene between the act and its referent. The relationship between the symbol and referent can only be indirect which consists in it being used by someone to stand for a referent.

In reading, the relationship between the symbol, thought, and referent becomes doubly complicated since the reader is twice removed from the author's particular act of reference. When an author wishes to communicate with a reader through the media of the printed word he assumes a particular act of reference, and presents the reader with the visual representation of the oral symbols. The reader is in fact presented with the symbol of a symbol. The reader must, therefore, first decode each symbol visually, with each visual representation associated with the reader's oral representation of that visual symbol. Secondly, the oral symbol must be associated by the reader with the idea of the author. The reader is then concerned with the visual representations of the auditory symbols; consequently, the degree

to which the visual symbols cause him to perform an act of reference
and assume an attitude more or less similar to the attitude of the author
will be influenced by the fact that the reader is further removed from
the author's particular act of reference by the added set of letter
symbols.

In discussing meaning from the viewpoint of psychology, Osgood
suggests that the psychologist is typically interested in defining
"that distinctive mediational process or state which occurs in the
organism whenever a sign is received or produced." (41: 9) He states
that there are as many meanings of meaning as there are disciplines
which deal with meaning and many more than this because exponents
within the discipline do not always agree with one another. He
suggests that the psychological aspect of meaning does not imply
that other meanings of meaning are incorrect but that they are related.
"'Meaning,' like emotion, is a relational or process concept." (41: 9)

It is because language signs have certain meanings in the
psychological sense that they are used consistently in certain
situations and consistently produce certain behaviour (social or
cultural meaning) and also that they occur in predictable association
with other signs and messages (linguistic meaning). Osgood posits
that the nature of representational processes, that is, psychological
meaning, is determined by the consistencies among behaviour and
situations in human experience, including the perception of message
sequences. This means, then, that meaning is acquired as a result of
the interaction between three "contexts"--the social or cultural, the

linguistic, and the psychological. When the reader interprets any symbol, his interpretation will be influenced in some degree at least by the culture in which he lives, the relationships among the visual representations of the auditory symbols presented, and the mediational processes that occur in relating the symbols and referents.

Linguists appear to have a split tradition with respect to meaning. Citing those linguists following the Bloomfield tradition (5), Osgood states, "They are prone to dismiss the problem from their own sphere of legitimate interest in messages per se . . ." (41: 2) More recently, however, linguists have sought a definition of meaning within their own methodology, defining it in terms of the total linguistic context within which a given sign appears. (32, 30) Gleason (20), in discussing language structures and systems, suggests that besides the systems of phonology and grammar generally agreed upon by linguists, some linguists consider that there must be a third, semology. He states:

> A sentence not only has a pronunciation and a grammatical structure, but also has meaning. Part of what is commonly called 'meaning' can be defined by observing situations in which the sentence is used. This lies outside the language. Another part of 'meaning,' however, seems to be organized within the language. (20: 105)

He supports this by suggesting that, in English at least, speakers are forced to make patterns of distinction, for example, the assignment of singularity or plurality. Also, words form systems of contrast which sometimes follow and sometimes cut across differences of grammar.

Francis (18: 303) provides three phrases which exemplify the

semological system of the language. Consider the following:

1. a pleasing table.

2. a rotting table.

3. a dining table.

Clearly, these phrases are grammatically identical but their semological content is distinctly different. "A pleasing table" means a table that is pleasing, "a rotting table" means a table that is in the process of rotting, "a dining table" means a table used for dining. While the semological content of these phrases is distinctly different, there are no formal visual marks of distinction. The meaning of the three phrases is distinguished through the semological system of the language.

In relating this to the acquisition of meaning, it seems clear that meaning may be determined from the linguistic context by the semological system of the language. When a reader attempts to decode the signs presented in a linguistic context the semological system provides clues which may assist the reader in perceiving the meaning intended by the author

III. CONTEXT THEORY OF MEANING

Zahner (52) cites as one of the cardinal principles of language that words derive their meanings from their various and intricate connections with the world of things and the world of men--from man's total experience in his environment of animate and inanimate creation. The phrase "various and intricate connections" may be interpreted as

context in its broadest sense, that is, including the social,
psychological, and linguistic contexts. Therefore, these various
contexts will each influence, in some degree, the attachment of
particular meaning or meanings to a word or words in discourse,
spoken or written.

Carroll (10) in discussing the theory that the meaning of a
word is to be found in its context states:

> This is only true . . . in the sense that the context may
> provide a clue as to the particular meaning (or standardized
> concept) with which a word is intended to be associated.
> (10: 226)

He suggests that a meaning of a word is a societally standardized
concept and when one says a word stands for a concept it is understood
that one is speaking of concepts which are shared among the members
of a speech community.

Richards (43) states that a word like any other sign gets
whatever meaning it has through belonging to a recurrent group of
events which may be called its context. He suggests two senses of a
word's context: (1) a word's context is a certain pattern of past
groups of events. To say that its meaning depends on its context would
be to point to the process by which it has acquired its meaning, and
(2) a word's context is the words which surround it in the utterance
and the other contemporaneous signs which govern its interpretation.

It is evident, then, that philosophers, ancient and modern,
linguists, and psychologists have been and are presently concerned
with word meaning. The authorities cited do support, at least in
degree, what may be termed a context theory of meaning. If we accept

the premise that the context, social and/or cultural, psychological, and linguistic, does determine word meaning it seems logical to question what in the context aids in determining the meaning of a particular word.

These authorities appear to support what may be termed a context theory of meaning. Readers are social beings; therefore, the interpretation of meaning will be made in light of one's particular culture or social group. In the task of reading the reader attempts to decode the signs presented in a written discourse. Therefore, in this decoding process the three contexts will influence, each in some degree, the reader's assignment of meaning to the signs in the discourse.

IV. THE ROLE OF CONTEXT IN THE READING PROCESS

Gray (23) in 1960 presented his model of the major aspects of reading to the annual Conference on Reading at the University of Chicago. He cited four major aspects of reading:

1. Word perception.

2. Comprehension.

3. Reaction to what is read.

4. Fusion of new ideas with old.

In his elaboration of each of these aspects he includes context clues as one of the four essential aids to word perception, the others being memory of word form, word analysis, and use of the dictionary. Gray stresses that while these and other components of his model are

discussed separately, he recognizes the fact that they are closely interrelated and form a psychologically coherent unit. This means that one may interpret his four essential aids to word perception as not individually, but together vital to accurate word perception.

Goodman in his discussion of reading comprehension states that the reader "goes from the written language, visually perceived, toward a reconstruction of a message which has been encoded in written language by the writer." (21: 188) This means that the reader must decode the written message and the degree of agreement in meaning between the decoder, the reader, and the encoder, the writer, is the extent to which the reader has comprehended. He stresses the importance of language systems by stating that if one concentrates attention on the graphic system only "we ignore the grammatical cue systems which make it possible for these bits and scraps to carry a meaningful message from the writer to the reader." (21: 189) Therefore, in comprehending written language, the reader employs a variety of graphic marks, familiarly patterned cues, signals, and symbols which assist him in calling forth associations, concepts, and experiences acquired previously.

Francis (18) has identified five signals of syntactic structure that are the devices speakers of English use to build words into larger combinations or structures and reveal to the listener patterns of structural meaning in which words are arranged. When these five signals are applied to the writer and reader one must reject one of the signals--prosody. Prosody is the overall musical pattern of stress,

pitch, and juncture in which the words of an utterance are spoken.

Since the graphic system of English commonly used does not permit

representation of the features of prosody, this signal of syntactic

structure is not applicable. The remaining four remain pertinent.

These are:

1. Word Order: This is the linear or time sequence in which words

    appear in an utterance. (18: 234) Consider, for example, the

    following structures: "house dog" and "dog house." Clearly

    the word components of the two structures are identical but

    the difference in order indicates a meaning difference as well.

2. Function Words: These are words largely devoid of lexical

    meaning which are used to indicate various functional relation-

    ships among the lexical words in an item. (18: 234) For

    example, consider the phrase "stood by the window." The

    function words "by" and "the" clearly indicate the relationship

    between the lexical words "stood" and "window." Without the

    function words the two lexical words become simply a random pair.

3. Inflections: Inflections are morphemic changes, the addition

    of suffixes, and concomitant morphophonemic adjustments which

    adapt words to perform certain structural functions without

    changing their lexical meaning. (18: 234) Consider, for

    example, the following word pairs:

                a. window   windows

                b. watch   watches

                c. man   men

It becomes obvious that the meaning we attach to the second word in each of the above pairs, the words to which inflections have been added, is somewhat different than the meaning we attach to the first member of each pair. Inflections then do serve as a signal of structural meaning.

4. Derivational Contrast: Derivational contrast is the contrast between words which have the same base but differ in the number and nature of their derivational affixes. (18: 234) For example, consider the differences in meaning one may attach to the words "idly" and "idleness" formed by adding the derivational suffixes "ly" and "ness" to the base word "idle."

Clearly then, these signal systems do provide a system of clues which assist in determining the meaning of a word or structure in written discourse, or more explicitly in the linguistic context. They provide, as Goodman states above, the grammatical cues which permit the transport of a meaningful message from the encoder to the decoder. The reader or decoder may use this variety of signals to call forth associations previously acquired and consequently may assist him in apprehending the meaning intended by the author.

V. LEXICAL AND STRUCTURAL MEANING

A concern of this study was how children use clues in the printed verbal context to determine the meaning of a word in written discourse. It is necessary then to distinguish between lexical meaning and structural meaning. This section is intended to relate

the difference between these two kinds of meaning and to provide

substantiation for the consideration in the construction of the Context

Clues Test (Appendix A) of only those words that meet the requirement

of membership in one of the four main classes of words.

Authorities such as Francis (18), Conlin (11), Lefevre (34), and

Fries (19) distinguish between lexical and structural meaning.

Structural meaning refers to the kind of meaning which is not associated

with the individual morphemes but which is solely a function of the

way individual morphemes are combined into utterances. Lexical meaning

is meaning associated with the separate morphemes and is the meaning

commonly referred to as dictionary meaning. Conlin states:

> Structural meaning attaches to all words in communication
> by virtue of their relationships and positions. Lexical
> meaning is what the term 'meaning' conveys to most of us:
> dictionary meaning, the kind of meaning we think of as
> inherent in a word, in and of itself, independent of sentence
> context. (11: 140)

This then means that as a reader is confronted with a variety of

symbols in a linguistic context the specific lexical meaning of a

particular word may be determined by cognizance of its relationship to

other words in the discourse, these relationships being portrayed by

the structure or function words.

Francis defines parts of speech as "classes of lexical words

distinguished by form and/or syntactic use and distribution." (18: 594)

With this criterion he identifies four different parts of speech to

which he applies the traditional names, noun, verb, adjective, and

adverb. Function words are excluded from this classification because

"they often help to mark the parts of speech to which other words

belong, but they do not themselves belong to the parts of speech."

(18: 235)

Conlin, after distinguishing between structural (functional) and lexical meaning, states:

> Nouns, verbs, adjectives and adverbs are said to have both lexical and structural meaning, whereas structure (or function) words are relatively weak or lacking in lexical meaning and derive their meaning almost wholly from their relations to the major actors on the language stage. . . . We may say that structure words are more significant for what they do than for what they 'mean,' for they perform a number of important grammatical functions. They connect word groups, both subject predicate word groups and modifier word groups. They are important elements in sub-ordination and coordination. They serve as agents in the process of substitution that makes our communication more concise. They help to transmit shades of attitude and feeling in verb phrases. (11: 140)

In this study the decision to select for treatment only those words that met the form class criterion was based on the writings cited above. The incorporation of the inflectional endings into the simulated words was based on the writings of authorities who treat English grammar from a linguistic viewpoint. Lefevre states:

> . . . the word form changes we do have yield important clues to structure. Represented clearly in graphic form and clearly heard in speech, they are essential to reading instruction: word-form changes are spelled consistently regardless of the sounds they 'spell.' These grammatical inflections are structural elements of the four main word classes in English . . . full words with specific inherent pattern signals that readers must take in if they are to comprehend meanings. (34: 145)

Francis as well provides substantiation for the inclusion of the inflectional endings in the simulated words. He specifies inflections as one of the signals of syntactic structure and defines them as "morphemic changes which adapt words to perform certain

structural functions without changing their lexical meaning." (18: 234)

VI. SUMMARY

Philosophers, ancient and modern, psychologists, and linguists have been and are concerned with the acquisition of meaning. The writings of these scholars support in degree what may be termed a context theory of meaning. As well, these writings indicate the influence of three broad contexts which may influence the acquisition of meaning. These are: social or cultural context, psychological context, and the linguistic context. This study has attempted to provide some indication of the elements in a linguistic context which aid in the determination of word meaning. The decision to investigate clues to word meaning in the linguistic context was arrived at because it seemed a reasonable and feasible area to study, not because the linguistic context is more important or more powerful than the other identified contexts.

CHAPTER III

RELATED LITERATURE

I. INTRODUCTION

The purpose of this chapter is to review literature relating
to the role of context in determining word meaning, the development
of classification schemes of context clues, and the effect of instruc-
tion in using context clues. Because of its importance to this study,
the Ames classification and its formulation are reported in detail.

II. THE ROLE OF CONTEXT IN DETERMINING WORD MEANING

Eckert (15) reported a study designed to assess the effect of
context on the comprehension of words. Using third grade students
and selecting material from a third grade basal reader, she concluded
that the interpretation of meaning from context is a matter of judgement
and reasoning in which brighter children are naturally more proficient
than others. She found that the pupils were not invariably assisted
by context, in fact she found that some students were more hindered
than helped by context. She interpreted this finding to suggest that
the problem of deriving meaning from context is very complex and
depends upon the nature of the context involved as well as on the
modifying effect of contiguous words and phrases.

The procedure followed in the current study permitted the
examination of whether or not the awareness of context clues hindered
or helped the students in the accurate identification of a word

represented by a simulated word in particular contextual situations.

Looby (35) found that children at the sixth grade level do use context to derive meanings for words and phrases encountered in their reading material. She suggested that their proficiency in deriving correct meanings is influenced to a high degree by their mental ability and their environment. She concluded that these children appeared to derive meaning from context although such derivations were not always correct and there was a greater tendency to gain meaning from the context among children of higher levels of intelligence.

In order to further examine the relationship between intelligence and the ability to use context clues in the current study the SCAT Ability Test Level 5 was administered to the students. The relationship between their performance on this test and the Context Clues Test (Appendix A) was computed.

Sachs concluded from his study with freshmen at the Louisiana Polytechnic Institute that "these students possess an astonishing immunity from learning words in context . . . the majority of them, in fact, make no effort at all to learn words from context." (45: 462)

Using sophomore students at Purdue University, Morgan and Bailey (39) in 1934 conducted a study designed to assess the effect of context on learning a foreign language vocabulary. They found that the results obtained made it impossible to draw any specific conclusions, except that generally, the presence or absence of context did not make a statistically significant difference in use of the dictionary, translation time, and delayed or immediate recall. They also caution

that the presence of context may lead the learner to guess the meaning of words and not verify his guesses.

The introspective technique used in the current study permitted the researcher to examine whether fifth grade students do, in fact, verify their guesses.

Higa (31) provides a useful interpretation of studies which involve the use of context in teaching a foreign vocabulary. He states:

> From the realistic viewpoint of the classroom teacher these opposing results may not be so meaningful, since the learning of a foreign language involves the coordinated acquisition of vocabulary, pronunciation, and syntax. If in any given situation the learning of words per se is the only purpose, then contextual learning may not be an effective method. (31: 174)

Werner and Kaplan (49) in their study on the acquisition of word meaning suggest that the child acquires the meaning of words principally in two ways. One is by explicit reference, either verbal or objective. The second way is through implicit or contextual reference. "The meaning of a word is grasped in the course of conversation, that is it is inferred from the cues in the verbal context . . ." (49: 1)

The main concern of the Werner and Kaplan study was the development of the signification process by children aged eight to thirteen. The procedure followed was to incorporate artificial words in a variety of contexts and then question each subject about the meaning of each artificial word in its particular contextual situation. The student responses concerning the meaning of a particular artificial word in a variety of sentence contexts provided the data for the study. These researchers were impressed by the variety of processes by which students acquired and generalized word

meanings from verbal contexts. From the analysis of their data, Werner and Kaplan suggest the developmental nature in the signification process.

Two major forms in the development of the signification process were identified. The first of these involves the lack of differentiation between the meaning of a word and the given verbal context. This means that instead of conceiving the word as referring to a circumscribed meaning, many of the nine and ten year old children in their study regarded the artificial word as carrying the meaning of the whole or part of the context in which it appears. For example, one sentence containing the artificial word Bordick (fault) was the following: "People talk about the Bordicks of others and don't like to talk about their own." One child dealing with this sentence remarked: "Well, Bordick means 'people talk about others and don't talk about themselves,' that's what Bordick means." (50: 252) In their statistical analysis of the responses Werner and Kaplan noted that signification of this type decreased sharply between the age groups ten and eleven. The introspective technique employed in the current study permitted the examination of this type of signification.

The second major form of signification involved word meaning definitely set apart from the context of the sentence. However, it differed from conventional meaning in that it bore a wide situational connotation rather than a circumscribed, stable one. For example, one sentence containing the artificial word Ontrave (hope) was the following: "Ontrave sometimes keeps us from being unhappy." A child

substituted for Ontrave the circumscribed word "want." However, on probing, it became apparent that "want" referred to a broad contextual situation: "If you want a bow and arrow set and you get it, that keeps you from being unhappy." (50: 254) Analysis of these responses resulted in the suggestion by Werner and Kaplan that this type of signification gradually decreases as the children increase in chronological age. This would suggest an increasing precision in the signification process as children increase with age.

Because the current study is concerned with one grade level and consequently a relatively homogeneous age group it was not possible to assess the developmental nature of this signification process from one grade to another. However, the precision of the signification process at the grade five level was examined.

Generally, then, one might expect the students at the fifth grade level to show some tendency to conceive words as referring to a circumscribed meaning as opposed to carrying the meaning of the portion of the context in which they appear. However, one would expect increased precision in the determination of word meaning in a given contextual situation.

Context, then, does assist in the selection of the appropriate word meaning, a facility which increases with students' ages. While the studies cited do support the role of context in the determination of word meaning, they do not specify what it is in the context that assists in determining word meaning nor do they clearly indicate which variables, with the exception of intelligence, may be related to the ability to use context clues.

III. THE DEVELOPMENT OF CLASSIFICATION SCHEMES OF CONTEXT CLUES

The classification schemes reported below were devised as a result of attempts to determine what in the context assists in the determination of word meaning.

Artley (4) in 1943 published his classification of context clues to word meaning. He states that the purpose of his scheme is to organize context in such a way that it might be presented systematically to the child. He also stresses that there is a great deal of overlapping in the scheme and that rarely will a particular clue exist in complete isolation. His scheme follows:

1. Typographical aids.

    a. Quotation marks.

    b. Italics.

    c. Bold face type.

    d. Parentheses.

    e. Footnotes or glossary reference.

2. Structural aids.

    a. Appositive phrase or clause.

    b. Non-restrictive phrase or clause.

    c. Interpolated phrase or clause.

3. Substitute words.

    a. Synonyms.

    b. Antonyms.

4. Word elements.

    a. Roots.

        b. Prefixes.

        c. Suffixes.

5. Figures of speech.

        a. Similies.

        b. Metaphors.

6. Pictorial representation.

        a. Pictures.

        b. Diagrams.

        c. Charts, graphs, maps.

7. Inference.

8. Direct explanation.

9. Background of experience.

10. Subjective clues.

        a. Tone.

        b. Mood.

        c. Intent.

McCullough (37) in 1945 published her classification scheme of context clues based on a study conducted with college freshmen at Western Reserve University. The subjects were presented with passages in which the strange words were left blank and they were instructed to provide the missing words. She found that the students guessed poorly and varied in their ability to use different kinds of clues, even though the passages contained one or more clues clearly pointing to the characters of the missing words. In holding what she describes as "post mortems" with the students over their bad guesses on the

experimental passages, the students tried to analyze in their own words
the kind or kinds of clue present in each case. It is from this
analysis that the classification scheme outlined below was constructed.

1. Definition: In this case the unknown word is defined
   elsewhere in the passage.

2. Experience: The unknown word is predictable from what the
   child or adult knows of such situations through book or
   life experience.

3. Comparison or contrast: The unknown word is likened to or
   contrasted with something known.

4. Synonym: A synonym for the unknown word is provided in the
   context.

5. Familiar expression or language experience: This requires
   an acquaintance with common language patterns.

6. Summary: The unknown word summarizes several ideas that
   precede it.

7. Reflection of mood or situation: The context provides a
   situation or establishes a mood or tone and the unknown
   word reflects that kind of situation or that kind of
   mood.

Like the Artley scheme, this classification provides a clear
explanation of particular context clues. As well, the latter scheme
was constructed as a result of student identification, very generally,
of context clues actually employed in attempting to supply the missing
words.

Seibert (46) in 1945 reported a study of the practice of guessing foreign word meanings from context. The subjects of her study were university students and from their performance on the testing instrument Seibert developed the following classification.

1. Word association.

    a. Words frequently coupled together from use.

    b. From the function of the word in the sentence.

    c. The quality of things known from experience.

    d. Word-group associations or series.

    e. Words coupled in familiar expressions.

    f. Use of synonyms.

    g. Use of antonyms.

2. Sentence structure.

    a. The same idea repeated in two structure forms.

    b. Opposite ideas--sentence structure permitting presentation of contrasting ideas.

    c. Comparisons.

    d. A chain of actions which follow each other in logical order.

3. Association of ideas.

    a. Clues given by the background.

    b. Clues found in the sentence which follows.

    c. Associations due to everyday experience.

4. Use of deduction.

    a. Repetition of the same word in context.

b. Process of elimination.

c. Definition or description.

5. Clues found in the general meaning of the paragraph.

Deighton (13) in his study suggests some general principles which aid in explaining how context operates in vocabulary development. While he agrees with others that context may determine the meaning of a word, he suggests that it does not necessarily reveal the meaning of a word. Therefore, awareness of context clues is two things. The reader is not only able to identify the unknown word but he is also able to tell what in the context assisted him in making the identification. He claims that vocabulary growth through context revelation is a gradual matter, that is, a matter of finding one clue here and another there, fitting them together, making tentative judgements and revising them as later experience requires. Deighton also suggests some limiting factors in context operation:

> The effectiveness of context in revealing meaning is limited; it depends on the previous experience of the reader, on the proximity of the enlightening context to the unfamiliar word and on the clearness of the connection between the context and the word it bears upon. (13: 15)

With these limitations in mind and the claim that context reveals the meaning of unfamiliar words only infrequently, Deighton suggests a brief classification scheme of context clues.

1. Definition.

2. Example.

3. Modifiers.

4. Restatement: Author inserts a statement of qualification

or elaboration.

5. Inference: Reading between the lines for suggested

meanings.

Ames (2), in his doctoral study of 1965, conducted research

designed to study the process by which readers determine word meaning

through the use of verbal context. More specifically, the basic

purpose of his study was:

> To determine from the verbal responses of readers the types
> of contextual aids that serve as clues to the meanings that
> might be attached to simulated words, and to classify these
> contextual aids on the basis of the elements of the verbal
> context that had been utilized. (1: 57)

He concludes from his study that it is possible to place the types of

contextual aids successfully used by readers into a classification

scheme of substantial reliability.

To determine which context clues readers were using in

attempting to determine the meaning of simulated words, Ames employed

introspective technique. By this technique the readers were asked

to verbalize what clue or clues in the context did in fact aid them

in making their decision. Gray (24) cites several studies, the results

of which support the use of this technique. He suggests that the very

common research technique of factorial analysis "has not greatly

advanced our knowledge of the basic factors in interpretation nor

methods of improving competence in thoughtful reading." (24: 66)

The studies clearly reveal the effectiveness of introspective and

retrospective techniques, at high school and college at least, in

determining the nature of the thinking involved. The recordings

secured make it possible to analyze responses in detail and provide for verification and/or extension of conclusions.

For his sample, Ames (1) selected twenty doctoral candidates in various fields of education in order that he would have a group of readers who would have at their disposal the necessary abilities to use all possible means and context clues to derive the meaning of unknown words. The reading materials were selected from The Saturday Evening Post and the Reader's Digest, not because they seemed to be particularly applicable, but because they were concerned with topics of general interest.

In preparing the randomly selected articles from the two periodicals, Ames treated every fiftieth word in each article, provided it met the requirement of belonging to one of the four main meaning classes of words. This requirement is based on the writings of authorities, for example Conlin (11), who have approached the matter of grammar and parts of speech from a linguistic viewpoint. These authorities have isolated four main meaning classes of words which closely correspond to the traditional parts of speech, noun, verb, adjective, and adverb. Contrasted with these meaning classes of words are the structure or function words which are relatively empty of meaning themselves but give coherence to the language, relate words and word groups, and assist in providing a totality of meaning. Consequently, Ames treated only words that met this requirement. If the fiftieth word did not meet this requirement the count was continued until a suitable word could be identified. From this word the

procedure was repeated to the end of each article. Because of the
requirement mentioned above, determiners, auxiliary verbs, inflectional
verbs, intensifiers, conjunctive adverbs, connectives, pronouns, and
interjections were not considered.

The words selected for treatment were replaced with a simulated
word of the same length. Structural or inflectional endings were
retained in order to keep the grammatical structure of the sentence
intact. A dictionary was consulted to ensure that the simulated word
did not exist in the English language. When the simulated words had
been constructed each selection was typed with the simulated words
underlined.

The subjects were individually tested by the researcher. The
testing procedure was explained and a selection was randomly chosen.
The subject was asked to begin reading the selection. When the subject
decided upon a word which might be represented by the first simulated
word he indicated this to the examiner. The examiner then questioned
the subject in an attempt to determine what word the simulated word
might be representing and to designate the portions of the context
which had assisted him in determining its meaning. This procedure
was repeated with each of the simulated words throughout the story.
These responses were tape recorded and transcribed for further
investigation.

Only those situations in which the reader was judged to have
produced an accurate meaning for the simulated word were studied. The
examination of the transcribed responses served as the basis for

classifying the types of contextual aids used by the readers. The resulting classification scheme of Ames (2) with explanatory remarks and examples follows.

I. Clues Derived from Language Experience or Familiar Expressions.

The reader recognizes a writer's use of a common phrase or idiomatic expression.

Example:

Response

Let us <u>heag</u> for a moment at the American automobile, the foundation of our entire economy and, maybe, even of our entire civilization.

"look. Let us do something for a moment and a phrase to introduce a discussion is 'let us look for a moment.'"

II. Clues Utilizing Modifying Phrases or Clauses.

The reader uses phrases that modify unknown words or modify a phrase in which an unknown word was contained.

Example:

Response

She ran but he caught up with her, knocked her down and <u>shoered</u> her repeatedly with a knife.

"stabbed. Because of the word 'knife' and doing something with it. Slashed or cut too would fit just as well."

III. Clues Utilizing Definition or Description.

The reader uses those parts of the context that describe or define unknown words.

Example:

Response

Some even looked alive,

"blood. Because it is what I

though no <u>steet</u> flowed be-   would expect to be flowing beneath

neath the skin.   the skin. That would give an

                              impression of life and color."

IV. Clues Provided Through Words Connected or in Series.

The reader recognizes the unknown word as part of a series of

words, phrases or ideas or the word was connected by 'and' to

another word, phrase or idea. He uses as contextual aids the

other parts of the series or the other word, phrase or idea

connected by 'and.'

    Example: Response

    Looking through an index of   "nose. These three are the

all the slides in the box,   internal features of the face

the officer picked out a   and nose completes the series."

<u>lona</u>, eyes, chin.

V. Comparison or Contrast Clues.

The reader recognizes a comparison or contrast of words,

phrases, clauses or ideas present in the context.

    Example: Response

    The draft was dropped after   "reinstated. It was dropped

World War II, but <u>haitsmaged</u>   it says and then in 1948 it got

in 1948, following a bitter   brought back in. The word 'but'

nationwide debate.   was a kind of clue."

VI. Synonyn Clues.

The reader uses as a context clue a synonym in the context for

the unknown word.

Example:	Response
Their achievement was so breathtaking that it <u>whodeted</u>--and still provokes--a kind of idolatry and the great controversy.	"aroused or provoked. The phrase that follows says 'still provokes' so it must be that the word means the same thing only in the past tense."

VII. Clues Provided by the Tone, Setting, and Mood of a Selection.

The reader uses as a context clue the tone, setting, or mood established by the writer.

Example:	Response
The most withering insult that can be hurled at a man today is "leftist"--a term almost synonymous with "Communist." We <u>grish</u> as the sensitive ears developed by all minority members pick up such expressions as "left-handed compliment" and "left-handed thinking."	"cringe. A verb of action is needed. Terms such as 'withering insult' and 'sensitive ears' give me the idea of cringe."

VIII. Referral Clues.

The reader uses certain referral signal words in determining the meanings of unknown words.

Example:	Response
Knowing that women usually	"things. Just has to be a

don't want anything they   term for all these chores listed

have to peel, shuck, scrape,   just before."

chop or wash through three

waters, Jenkins started

doing these <u>swurts</u> at the

store.

IX. Association Clues.

Certain words used by writers arouse associations in the minds

of the readers.

Example: Response

"In our reader," my oldest   "pants or trousers. Word

child once snorted, "all the   'wear' tells me it is an article

little boys wear short <u>nerns</u>   of clothing. And pants could be

and their names all end in 'y'   short."

and they're cute."

X. Clues Derived from the Main Idea and Supporting Details Paragraph

Organization.

In this type of paragraph organization a main idea was stated

and then evidence used to substantiate it in the other sentences.

The simulated words appeared either in the sentence expressing

the main idea or those sentences which substantiated the main

idea.

Example: Response

However, I soon found a   "practical. He wasn't going

<u>spemgelan</u> use for it. I   to use it for mixing cocktails

began storing orange juice in it, since it fitted nicely inside the refriger- ator.

so he is going to use it to store orange juice which is what I would consider a practical use for it."

XI. Clues Provided Through the Question and Answer Paragraph Organization.

In this particular organizational pattern the writers introduced a new thought in a paragraph by posing a question and then proceeding in the paragraph to answer it. The meaning of the simulated word, used either in the question or the answer, was determined through recognition of this organizational pattern.

Example:

Now it's becoming inter- esting to ask, "How does the human brain do it?" And, for the first time, within the last year or two, we're vocting a real idea of that.

Response

"getting. They are talking about being interested and wanting to know how the human brain is doing it and this is the first time we are getting an idea of that. For one thing the way it is positioned in the sentence-- you need a verb there."

XII. Preposition Clues.

The reader recognizes the simulated words as objects of prepositions and the prepositions were identified as clues.

Example:

A little later, as he

Response

"freeway or highway. When

sped northward along a California cliotol, Kendricks was stopped by a highway patrol officer.	you're speeding northward on something and are stopped by a highway patrol officer, you have to be on some kind of highway. 'Along' gave a good idea."

XIII. Clues Utilizing Non-restrictive Clauses or Appositive Phrases.

When the simulated word appeared in either a non-restrictive clause or an appositive phrase within a sentence, the reader recognized the relationship of the phrase or clause to other parts of the sentence.

Example: Response

Las Vegas, which larps few   "misses. 'Few others' is the
other bets, has yet to provide   clue here and also 'yet.'"
a slot machine by which we
can lose our money with our
left hand as nature intended.

XIV. Clues Derived from Cause and Effect Pattern of Sentence Meaning.

The readers recognized sentences that contained a type of cause and effect thought relationship and understanding this relationship served as a clue.

Example: Response

Foremost, of course,   "higher. Drivers need to
drivers need to realize that   realize that something is happen-
by cheating the insurance   ing to their premiums and this is
companies, they are only   the type of thing that worries

pushing their own premiums   them. They don't worry if they

<u>lorter</u>.   are lower."

Ames identified some twenty-five responses that were not classifiable within the above scheme and whose incidence was too infrequent to warrant categorization.

Similarities and differences are notable in the five classification schemes described. For example, all of the schemes make provision for the past language experience of the reader and the use of modifiers as clues to word meaning. The schemes differ notably in their formulation. The Artley scheme (4) appears to have been developed as a result of his attempt to organize context in such a way that it might be presented systematically to the child. This scheme also provides for clues not contained in the verbal context. The Deighton scheme (13) was developed as a result of his examination of some 500,000 words of running text. Seibert (46) developed her scheme as a result of the attempts of college students to use verbal context to determine foreign vocabulary meaning. To formulate their schemes, McCullough (37) and Ames (2) both used the responses of students as they attempted to explain what context clues they used to determine word meaning. This, in the McCullough study, was done rather informally while Ames used the student responses as the basis for his investigation. One would expect considerable overlapping in each of the schemes. Artley states that a particular clue will rarely exist in complete isolation.

IV.   INSTRUCTION IN THE USE OF CONTEXT CLUES

McCullough and Edick (37) conducted a study using five of the categories of the McCullough scheme. Third grade reading materials were examined to determine which context clues were provided by the authors. No instances of summary or reflection of mood were found. A test was constructed which provided for assessment of the ability of third grade students to use the five remaining categories. The results of the testing indicated a slight tendency for the brighter and for the older, less intelligent children to make a higher score but there was no consistent trend in this regard. The two researchers conclude that if their analysis is significant it appears that through our failure to provide guidance in the use of context clues children are clearly not benefiting by superior intelligence or superior reading ability in determining meanings of unknown words. McCullough states: "They are guessing blind and their results yield an average success of about 40 per cent." (37: 4)

Two recent studies have been conducted to determine the effect of actually providing instruction in the use of context clues. Guarino (26) concluded from his 1960 study that improvement in the ability to use context clues could be expected from grade to grade at the high school level. He also found that with instruction in the use of context clues, significant improvement in the ability to infer the meanings of unfamiliar words encountered in a reading passage occurred and this ability was significantly correlated with intelligence and reading ability.

Hafner (28) in a study reported in 1965 attempted to determine what effect an experimental program consisting of lessons in the use of selected context clues would have on tests measuring reading comprehension, vocabulary-in-context, and context comprehension. He was able to draw two conclusions from this study conducted with fifth grade students for a one month period.

1. While no statistically significant differences occurred between the control and experimental groups after short term instruction in the use of context clues, there is a suggestion that it is in the area of vocabulary-in-context that the teaching of context aids would be most effective. This means that the examination of individual words in their verbal context and the distinguishing of the elements in the context which aid in revealing the intended meaning of a particular word are perhaps the most effective ways of instructing students to use context clues.

2. Children of similar intelligence and background of experience who had received instruction in the use of context clues made greater gains in comprehension than did similar children who had not received instruction.

These studies show then that students do not intuitively use context clues as aids to determining word meaning and that instruction in the use of context clues does benefit students in their determination of word meaning.

V. SUMMARY

The studies conducted by Eckert (15) and Looby (35) suggest that children do use context clues and their facility in the use of context clues may be correlated with their intellectual capacity and their environment. The research of Sachs (45), Morgan and Bailey (39), and McCullough and Edick (37) illustrates the inability of students to use context clues from the primary school to college level. The recent studies of Guarino (26) and Hafner (28) suggest that instruction in the use of context clues does assist students in deriving word meaning through the use of context clues.

The studies of Artley (4), McCullough (37), Seibert (46), and Deighton (13) provide clear explanation of what the individual researcher has identified as a context clue. With the exception of the McCullough study, the classifications formulated appear to have been arrived at by factorial analysis of the pupil responses or the reading materials. The Ames classification (2) is the result of a very recent study and was arrived at using an introspective technique. McCullough (37) in her study used this technique in a very general fashion and on a group basis. It would appear then that the Ames study is the only one in which a classification scheme of substantial reliability was formulated from the reader's identification of context clues used in determining word meaning.

CHAPTER IV

THE PLAN OF THE STUDY

I. INTRODUCTION

The purpose of this chapter is to describe the population
and sample selected for the study, the standardized tests used, the
Context Clues Test, the findings of the pilot study, the collection
and analysis of the data, and the reliability of the classification
of the student responses within the Ames scheme.

II. THE SAMPLE

Administrative officials of the Edmonton Public School system
assigned the researcher two fifth grade classes from each of four
areas in which the following socio-economic categories, as determined
by school system officials, are predominant: (1) professional,
(2) highly skilled, (3) semi-skilled, and (4) unskilled. From a total
population of 5,764 and a test population of approximately 240, a test
sample of forty students was selected using a table of random numbers.

Table I presents a brief description of the sample of students
in terms of socio-economic area, sex, and chronological age. The
average chronological age of the sample was 131.1 months. From the
schools representative of the "Professional" and "Highly skilled"
categories there were equal numbers of boys and girls. Fewer girls
than boys represented the remaining categories with more than twice
as many boys than girls representing the category "Semi-skilled."

TABLE I

DESCRIPTION OF STUDENT SAMPLE

Socio-economic area	No. of students by sex		Average chronological age in months
	Male	Female	
Professional	5	5	131.1
Highly skilled	5	5	131.6
Semi-skilled	7	3	130.4
Unskilled	6	4	132.0
Total	23	17	
Average chronological age in months of total population			131.1

Similarly, in the students randomly selected from the category "Unskilled" nearly half of them were girls.

III. THE STANDARDIZED TESTS

The variables selected for statistical control in this study were reading ability, mental ability (verbal ability and quantitative ability), listening ability, chronological age, and sex. The data for the latter two variables were collected from the room attendance registers and the standardized tests listed below were administered to obtain the data for the remaining variables. These standardized tests were administered to school groups of the test sample in random order to reduce the possibility of an order effect.

1. <u>Sequential Tests of Educational Progress</u>, <u>Reading</u>, <u>Form 4A</u>.

    (Appendix B)

This is a standardized achievement test designed to evaluate student ability to read materials with comprehension. The questions on each passage are distributed among five general categories of skills. These are:

    a) Ability to understand direct statements made by the author.

    b) Ability to interpret and summarize the passage.

    c) Ability to see the motives of the author.

    d) Ability to observe the organizational characteristics of the passage.

    e) Ability to criticize the passage with respect to its ideas, purposes, or presentation.

The selections represent a wide range of content. Hobson in his review of this test states that it has been "broadly conceived, expertly planned, scientifically executed." (8: 753)

This test contains a wide variety of reading materials. At least three of the selections may be described as examples of expository writing and in this way they are similar to the story used in the construction of the Context Clues Test (Appendix A).

2. The Cooperative School and College Ability Tests, Level 5, Form A. (Appendix B)

This is a standardized ability test constructed specifically to aid in estimating the capacity of the student to undertake the academic work of the next higher level of schooling. The test is designed to measure verbal and quantitative abilities. Four operational skills are measured:

Part 1. Getting the meaning from isolated sentences.

Part 2. Rapid number computation.

Part 3. Associating the meaning of isolated words.

Part 4. Solving arithmetic problems.

Green states that the SCAT series "can be regarded as a set of very good scholastic aptitude tests." (9: 716) Fowler states that "undoubtedly SCAT is a superior test series." (9: 453)

Since this test permitted the obtaining of separate scores for verbal and quantitative abilities, the researcher was able to calculate separately the relationship between these abilities and the ability to use context clues.

3. <u>Sequential</u> <u>Tests</u> <u>of</u> <u>Educational</u> <u>Progress</u>, <u>Listening</u>, <u>Form</u> <u>4A</u>.

    (Appendix B)

    This standardized test was designed as a measure of plain-sense comprehension, interpretation, evaluation, and application. Plain-sense comprehension refers to the ability to: (1) identify main ideas, (2) remember significant details, (3) remember the structure or simple sequence of ideas, and (4) demonstrate understanding of denotative meanings of important words. The examiner reads each selection to the students and then asks a number of questions. The examinees are provided with printed copies of the suggested answers only and mark on separate sheets what they regard as the best answer to each question. Lorge describes these tests as "well prepared, adequately item analyzed and well normed." (8: 654)

IV. THE <u>CONTEXT</u> <u>CLUES</u> <u>TEST</u> (APPENDIX A)

    The <u>Context</u> <u>Clues</u> <u>Test</u> was designed by the researcher closely following the procedure used by Ames in his doctoral study (2). The reading material used in this instrument was randomly selected from <u>Crossroads</u>, the fifth grade basal reader in the Harper and Row Basic Reading Series (17). This reader was not, at the time of this study, authorized for use in Alberta schools and therefore provided a sample of stories not familiar to the subjects. As well, validity and objectivity were maintained by using reading material prepared by experts in the field of reading as basal instructional material for students all over the North American continent. The story randomly

selected for treatment was "Happy Accidents." The procedure followed in treating the story follows.

Beginning with the first word the words were counted. The fiftieth word, provided it was a noun, verb, adjective, or adverb, was identified, to be replaced with a simulated word. If the fiftieth word did not meet the form class requirement the count was continued until a suitable word was found. From this word, whether or not it was the fiftieth word, the procedure was repeated to the end of the story. The identification of twenty-two words to be replaced with simulated words was made.

In constructing the simulated words, inflectional or structural endings were retained in order that the grammatical structure of the sentence might be kept intact. The retention of these endings also aided in strongly directing the students to use structural meaning to derive the lexical meaning.

Following the Ames procedure, it was proposed to keep the length of the simulated word the same as that of the word identified for treatment. However, concern that the length of the word itself might be a clue precipitated the decision to have all simulated words of equal length. To the knowledge of the writer no information concerning the average length of words in fifth grade basal readers is available. However, a tabulation of the length of words of the four main form classes on a randomly selected page of the story used in constructing the test indicated an average word length of 7.2 letters. Consequently, all simulated words consisted of seven letters with the retained inflectional or structural endings incorporated within these seven

letters. The simulated words presented a possible source of error in that their construction may have inadvertently triggered some association resulting in a correct or incorrect response. A dictionary check (48) was undertaken to ensure the simulated words did not exist in the English language.

Following construction of the simulated words, the story was typewritten with the simulated words replacing the words previously identified for treatment. The paper used in preparing the Context Clues Test was cut to be similar in size to that normally used in basal readers at this level. To increase the durability of the pages they were mounted on manilla tag. The simulated words were underlined to prevent confusion in locating them on the page.

V. PILOT STUDY

A pilot study was conducted in March 1968 at an elementary school of the Edmonton Public School system. The socio-economic status of the students attending this school may be described as ranging from the lower to the middle levels of a socio-economic scale. The school administration was asked to provide the researcher with a sample of fifth grade students representing a cross section of general reading ability. Nine students, four boys and five girls, were selected by the principal and the reading coordinator to participate in this pilot study.

The primary objectives of the pilot study were to determine a suitable procedure for administering the Context Clues Test and to

determine the protocol of the questioning to be used in the intro-spective technique.

It had been originally proposed to design three context clues tests using randomly selected material from a selected basal reader and administer the three tests to each student. By this procedure it was intended that the use of materials written by three different authors would increase the ability to generalize any findings. However, this procedure during the pilot study indicated that approximately one and one-half hours were required to administer the three tests to each student. Consideration of the total time that would be required to administer these tests and the standardized tests to a test population of forty subjects prompted the decision to recognize the use of material written by one author as a limitation and proceed using only one of the treated stories, randomly selected.

The procedure to be followed during the administration of the Context Clues Test was explained to the nine selected students as a group. Following this, each child was taken in turn to the examination room for administration of the test. The administration procedure follows.

The subject entered the examination room and the procedure was explained a second time. He was then asked to read the first page of the story. Following this reading his attention was directed to the first of the simulated words. He was asked:

1. What word do you think this group of letters is representing?

2. Why do you think that group of letters might represent that word?

3. Are there any words in the story that helped you decide on that

    word?

His responses to these questions were tape recorded. Questions about

the procedure were clarified before proceeding to the next simulated

word. The procedure was repeated throughout the story. Typescripts

were produced from the tape recordings.

    Production of the typescripts of the pilot study indicated a

necessary revision in the questioning allowing the researcher to

repeat the word identified by the pupil so the typist could verify the

response. The revised protocol and the rationale for it follows.

1. What word do you think this group of letters is representing?

    This question asks the student to identify and pronounce a

word that would be suitable in the particular contextual situation.

2. Why do you think that group of letters might represent _____?

    This question asks the student to provide reasons for his choice

in responding to question one.

3. Are there any words in the story that helped you decide on _____?

    This question asks the student to identify particular words in

the context which assisted him in deciding upon his answer to question

one.

VI. DATA COLLECTION

    The data were collected by the researcher during May 1968. The

group tests were administered in random order by the researcher to the

ten students selected from each of the four schools. The administrative

procedure specified in each of the test manuals was carefully observed.
Each group of ten students was not asked to perform on more than one
of the standardized tests per day. These tests were hand scored by
the researcher.

The Context Clues Test was administered to each student by the
researcher. The procedure decided upon as a result of the pilot study
was carefully observed. Student responses were tape recorded and type-
scripts of the recordings were produced.

VII. DATA ANALYSIS

The question of the ability of fifth grade students to identify
words represented by simulated words in particular contextual situations
was answered by tabulation of the number of words correctly identified.

The question concerning the ability of fifth grade students to
verbalize their awareness of context clues was answered by tabulation
of the number of responses classifiable within the Ames scheme providing
the student had correctly identified the word represented by the
simulated word.

Two statistical procedures were applied to assess the relation-
ship between the selected variables (that is, reading ability,
listening ability, verbal ability, quantitative ability, sex, chrono-
logical age) and the ability to verbalize their awareness of context
clues in selected basal reading materials:

1. Pearson Product Moment Coefficient of Correlation. This was

    applied to determine if a linear relationship between the

    variables exists.

2. Stepwise Multiple Linear Regression. This was applied to determine
the rank order of the selected variables as predictors of the
criterion score, that is, the ability to verbalize awareness of
context clues in selected basal reading materials. This
regression identifies the best single predictor and continues
to identify additional variables which account for successive
amounts of variance in the criterion score.

No analysis was planned regarding socio-economic status but
control through selection of the test sample from a variety of socio-
economic statuses was deemed desirable.

In order to gain more information about how fifth grade students
use context clues their responses were analyzed. This analysis included
the classification of words identified by the students as clues which
assisted them in their correct and incorrect identifications, the form
class agreement between the words represented by simulated words and
incorrect student identifications, and the location of words identified
as clues by the students. As well, the number of incorrect identifica-
tions that could be considered as reasonable substitutions and the use
of sentence sense as a clue were examined.

VIII. RELIABILITY OF CLASSIFICATION OF STUDENT RESPONSES
ON THE CONTEXT CLUES TEST

The reliability of the classification within the Ames scheme
of words specified as clues by the students in their correct identifica-
tions of words represented by simulated words in particular contextual
situations was established through interjudge agreement. The total
number of correct identifications were classified by two independent

judges as well as by the researcher. Both of the judges hold

Bachelor's degrees in Education from the University of Alberta and

have had considerable teaching experience in the upper elementary

grades in urban centres of this province.

To prepare each judge for his independent classification of

the correct identifications he was asked to read a report of the

Ames study (1) in which the classification scheme and its derivation

were reported. The judges were then given a copy of the typescripts

of the students responses on which the words to be classified were

identified.

Agreements were computed in terms of percentages through the

Arrington formula (3). Accordingly, the responses in each judge's

classification that agree with those of the researcher (that is,

doubling the agreements) was divided by this total plus the disagree-

ments, that is, responses dissimilarly classified. The formula is

$\dfrac{2 \text{ x agreements}}{2 \text{ x agreements} + \text{disagreements}}$. The percentages of agreement

between each of the independent judges are reported in Table II.

Examination of studies using the Arrington formula indicates that

the percentages of agreement listed in Table II may be considered

satisfactory (22).

IX. SUMMARY

The data were collected by the researcher in May 1968. The

test sample of forty students was randomly selected from approximately

240 grade five students in four schools in four different socio-economic

TABLE II

PERCENTAGE OF AGREEMENT BETWEEN RESEARCHER AND INDEPENDENT JUDGES
IN THE CLASSIFICATION OF CORRECT IDENTIFICATIONS

Independent judges	Percentage of agreement
1* + 2	98.2
1 + 3	87.2
2 + 3	85.6

*Judge #1 was the researcher.

areas specified by officials of the Edmonton Public School system. All

tests were administered by the researcher. The Context Clues Test

(Appendix A) was constructed closely following the procedure used by

Ames in his doctoral study (2). The standardized tests selected to

assess the three variables of mental ability, reading ability, and

listening ability were: (1) Cooperative School and College Ability

Tests, Level 5, Form A, (2) Sequential Tests of Educational Progress,

Listening, Form 4A, and (3) Sequential Tests of Educational Progress,

Reading, Form 4A.

Data on chronological age and sex were collected from the room

attendance registers. To check the classification of the responses by

the researcher the agreement between his classification and the

classification by two independent judges was calculated using the

Arrington formula. The analysis of the data with respect to the

stated hypotheses consisted of a tabulation of the correct identifica-

tions of words represented by simulated words and a tabulation of the

number of clues classifiable within the Ames scheme and specified by

students as those which assisted in the correct identification of a

word. The relationship between each of the variables and the

criterion score, and the power of the variables as predictors of the

criterion score were also computed. In order to gain more information

concerning the use of context clues by fifth grade students, the

student responses were analyzed in a variety of ways. This analysis

included the classification of words identified by the students as

clues which assisted them in their correct and incorrect identifications,

the form class agreement between the words represented by simulated

words and incorrect student identifications, and the location in the

passage of words identified as clues by the students. As well, the

number of incorrect identifications which could be considered as

reasonable substitutions for the correct word and the use of sentence

sense as a clue to the identification of the correct word were examined.

THE FINDINGS OF THE STUDY

The findings of the study are presented in two main sections.
The first section presents analyses of the data with respect to
the hypotheses stated in Chapter I while the second section presents
the findings of the examination of student responses undertaken to
gain more information concerning how these students used context
clues.

I.   THE FINDINGS WITH RESPECT TO THE HYPOTHESES

Hypothesis One:

> Students at the fifth grade level are not able to verbally
> identify correctly a word represented by a simulated word
> in a particular printed contextual situation.

The procedure followed to test this hypothesis was to
count the number of exact identifications of words represented
by simulated words. The decision to tabulate the exact identifica-
tion is based on Bormuth's research (7) regarding the validity of
grammatical and semantic classification of cloze test scores. He
concluded from his findings that scores obtained by counting
responses exactly matching the deleted words seemed to yield
the most valid scores.

The results of the tabulation are presented in Table III
and would tend to support the retention of hypothesis one. Students
were able to identify 17.5 per cent of the words represented by

simulated words. It is difficult to compare these results with
those reported by Ames because his study was conducted using
doctoral candidates in education who read materials of general
interest which were not expected to be accompanied by instruction.
It is interesting to note that his candidates were able to produce
accurate meaning identifications of only approximately 60 per cent
of the simulated words. In the current study developmental
reading material was selected since it is this material which is
largely used in classroom work. The performance of the fifth
grade students on the Context Clues Test was not considered as
adequate by the researcher.

TABLE III

IDENTIFICATION OF WORDS REPRESENTED BY SIMULATED WORDS

	Total no. of identifications		Percentage of total identifications
A. Correct		154	17.5
B. Incorrect		726	82.5
Responses given more than once	397		
Responses given once	329		
Total		880	100.0

For hypotheses two and three also, the 154 correct identifications
were the data considered. For the further examination of the student

responses a total of 551 identifications were examined. In addition, not only the 154 correct identifications were considered but also 397 of the incorrect identifications were examined. These 397 incorrect identifications consisted of those responses given to the researcher more than once.

Hypothesis Two:

> Students at the fifth grade level are not able to verbalize about which clues in the printed verbal context assisted them in the correct identification of a word represented by a simulated word in a particular printed contextual situation.

The procedure followed to test this hypothesis was to count the number of verbalizations that were classifiable within the Ames scheme. A prerequisite for classification was the correct identification of the word represented by the simulated word. This requisite was prescribed since the awareness of context clues in selected reading material was considered to be constituted of the ability to verbally identify a word represented by a simulated word and the ability to verbalize about which clues in the verbal context assisted the students in making the identification. (See Chapter I)

The results of this tabulation are presented in Table IV. The data presented in this table would support the rejection of hypothesis two. The students, in their verbalizations about which clues in the printed verbal context assisted them in the correct identification of a word represented by a simulated word in a particular printed contextual situation, provided verbalizations 93 per cent of

TABLE IV

CLASSIFICATION OF ACCURATE IDENTIFICATIONS OF WORDS
REPRESENTED BY SIMULATED WORDS

Total no. of accurate identifications	Percentage of accurate identifications classifiable within the Ames scheme	Percentage of accurate identifications not classifiable within the Ames scheme
154	93	7

which were classifiable within the Ames scheme. Only 7 per cent of

these verbalizations were not classifiable within this scheme.

Hypothesis Three:

> There is no relationship between the reading ability,
> mental ability, chronological age, sex, listening ability
> and the ability of fifth grade students to verbalize about
> which clues in the printed verbal context assisted them in
> the correct identification of a word represented by a
> simulated word in a particular printed contextual situation.

Table V presents a description of student achievement on the

administered standardized tests. From the student performance on

the SCAT Level 5 Form A, two achievement scores are presented. On

the verbal ability portion of this test the students achieved a

mean score of 39.57 out of a possible score of 50. The computed

standard deviation on this test was 6.53. On the quantitative

ability portion of this test the students achieved a mean score of

37.09 out of a possible score of 50. The computed standard deviation

on this test was 6.51. In their performance on the STEP Reading Form 4A,

the students achieved a mean score of 53.19 out of a possible score of

70. The computed standard deviation on this test was 8.37. Finally,

on the STEP Listening Form 4A, out of a possible score of 80, the

students achieved a mean score of 61.52. The computed standard

deviation for this test was 9.13. The complete data regarding student

achievement on the standardized tests is presented in Appendix C.

Two statistical procedures were applied to verify this hypo-

thesis:

1. The Pearson Product Moment of Correlation was used to

TABLE V

STUDENT ACHIEVEMENT ON STANDARDIZED TESTS

Test	Possible raw score	Mean	Standard deviation	Range of scores
SCAT Level 5 Form A				
Verbal ability	50	39.57	6.53	21-48
Quantitative ability	50	37.09	6.51	17-46
STEP Reading Form 4A	70	53.19	8.37	32-66
STEP Listening Form 4A	80	61.52	9.13	23-73

determine the relationship between each of the variables, reading

ability, mental ability, listening ability, chronological age, sex,

and the criterion score. The criterion score is the ability to

verbalize about which clues in the verbal context assisted in the

identification of a word represented by a simulated word. The relation-

ship between each of the variables and the criterion score is presented

in Table VI.

Analysis of this data indicates that of the variables selected,

the strongest correlations exist between reading ability, verbal

ability, listening ability, and the ability to verbalize about which

clues in the verbal context assisted in the correct identification of

a word represented by a simulated word.

Since children at this age and grade level hear and have

heard language used for approximately ten years, have been talking

for approximately eight years and have been learning to read for

five years, the strong correlations mentioned above are not unexpected.

2. The Stepwise Multiple Linear Regression was used to

identify the rank order of the variables as predictors of the criterion

score. This regression identifies that variable which accounts for

the largest amount of variance in the criterion score and continues

to select those variables which contribute significantly to the

variance in the criterion score. The findings of this analysis,

presented in Table VII, indicate that the variables of listening

ability and reading ability are the most powerful predictors of the

criterion score. This would suggest that those students who have

TABLE VI

RELATIONSHIP BETWEEN EACH VARIABLE AND THE CRITERION SCORE

Variables	Correlation coefficient with criterion score	Level of significance*
Reading ability	.57	.01
Mental ability		
(a) Verbal ability	.58	.01
(b) Quantitative ability	.13	ns
Listening ability	.61	.01
Chronological age	-.20	ns
Sex	-.08	ns

*After Guilford, p. 581.

TABLE VII

CALCULATIONS IN STEPWISE REGRESSION ANALYSIS

Step no.	Source of variance added	F ratio	't' test value	Significance of variance added	Per cent of variance predicted	Total variance predicted
1.	STEP Listening Test	22.28		**	36.96	36.96
2.	STEP Reading Test	18.97	10.25	**	13.67	50.63
3.	SCAT Quantitative section of test	13.31	1.48	ns	1.95	52.58
4.	Chronological age	10.15	.85	ns	1.13	53.71
5.	Sex	8.09	.47	ns	.63	54.34
6.	SCAT Verbal section of test	6.55	.00	ns	.00	54.34

** Significant at .01 level. (After Guilford, p. 581)

greater listening and general reading ability are able to use context clues as an aid to accurate word perception.

The remaining variables do not contribute significantly to the prediction of this criterion score. While the SCAT verbal score does not appear to account for any variance in the criterion score, any power this variable may contribute is probably incorporated in the predictive power of the STEP Listening Test and the STEP Reading Test.

The fact that the selected variables account for only 54.34 per cent of the variance in the criterion score permits conjecture as to what might be accounting for the remaining 45.66 per cent of the variance. One possibility is the story used in the construction of the Context Clues Test (Appendix A). This story is about science and consequently its interest appeal to the students in the test sample may have varied. Also, at least one of the words to be identified, matter, required familiarity with an expression frequently used in scientific writings, the composition of matter. As recognized previously, the construction of the simulated words may have inadvertently triggered some association in the mind of the student, resulting in the incorrect identification of a word represented by a simulated word in a particular contextual situation.

II. FINDINGS REVEALED THROUGH FURTHER EXAMINATION OF THE STUDENT RESPONSES

In order to gain more information about the use of context clues by fifth grade students using selected basal reading materials,

their responses were examined in a variety of ways. This analysis
included the classification within the Ames scheme of clues specified
by the students in their correct and incorrect identifications of
words represented by simulated words, the form class agreement between
the word represented by a simulated word and the students' incorrect
identifications, and the location in the context of words specified as
clues by the students. As well, the number of incorrect responses
that could be considered as reasonable substitutions and the use of
sentence sense as a clue were examined.

Classification Within the Ames Scheme of Clues Specified by Students in Their Identifications of Words Represented by Simulated Words

The students in their correct identifications of words represented
by simulated words specified clues which were classifiable within only
five of the fourteen Ames categories. These were:

1. Clues Derived from Language Experience or Familiar Expression.

   Examples:

Word represented
     by
simulated word   Student response

      Turn   "It says before the group of letters,
                                     'would not,' and then after the group of
                                     letters, 'into,' and I just think turn
                                     might go in there."

      Three   "Because it said 'princes.'"

2. Referral Clues.

    Examples:

        Burn   "Because in the sentence before it mentioned that this man came in with a burn from radium.

        Professor   "Yes, back a little further it says that he was a professor."

        Three   "Well, it has the fairy tale, the Three Princes of Serendip."

3. Association Clues.

    Example:

        Dance   "Because it says that he looked like a man that had gone crazy."

4. Preposition Clues.

    Example:

        Room   "Because of the words 'all over.'"

5. Clues Derived from Cause and Effect Pattern of Paragraph and Sentence Organization.

    Example:

        Left   "Well, he left it. That would pretty well be the only way he would be able to forget to disconnect the electric current."

6. Unclassifiable.

In the correct identification of ten words the students did not in their verbalization about which clues in the verbal context

assisted them in their identification, produce a verbalization

which was classifiable within the fourteen categories of the Ames

scheme.

Examples:

Day   "I don't know."

History   "Because these people were in the

                                history of the world."

The classification of word clues specified by students in their

identification of words represented by simulated words is presented in

Table VIII. These data indicate that students, in their attempts to

identify a word represented by a simulated word, rely heavily on very

broad levels of experience to provide clues to assist them in making

their identification. For example, the categories "Clues derived from

language experience or familiar expression," "Referral clues," and

"Association clues" were specified in approximately 90 per cent of

the correct and incorrect identifications. The remaining categories,

which may be considered as requiring more precision than those listed

above, were used rarely or with any degree of success. As well, these

latter categories require more knowledge of the structure of the

language, a knowledge which the students may not have acquired or

been taught.

The data presented in Table VIII also indicate that the Ames

scheme may not be appropriate for use with students of this age and

grade. While all but 7 per cent of their specified clues were

classifiable, the large majority of them were classifiable in the

TABLE VIII

COMPARISON OF CLASSIFICATION OF CLUES SPECIFIED BY STUDENTS IN THE IDENTIFICATIONS OF WORDS REPRESENTED BY SIMULATED WORDS

Categories of Ames scheme	Correct identifications		Incorrect identifications		Percentage difference of clues specified in correct and incorrect identifications
	No.	Percentage of total	No.	Percentage of total	
Clues derived from language experience or familiar expression	82	53	160	40	13
Referral clues	26	18	30	8	10
Association clues	30	19	165	42	23
Preposition clues	2	1	0	0	1
Clues derived from cause and effect pattern of paragraph and sentence organization	4	3	0	0	3
Comparison or contrast clues	0	0	13	3	3
Synonym clues	0	0	2	0.5	0.5
Unclassifiable	10	7	27	7	1

categories representative of very broad levels of language experience.

The classification of the clues specified by the students in their incorrect identifications of words represented by simulated words was also undertaken in order to determine if clues of any of the categories were in fact miscueing the students in their attempts to identify words represented by simulated words. In order to provide a limitation to this classification only clues specified in incorrect identifications occurring more than once were considered.

The data presented in Table VIII indicate that the students in their incorrect identifications specified as clues those classifiable within only five of the Ames categories. These categories were:

1. Clues derived from language experience or familiar expression.

2. Referral clues.

3. Association clues.

4. Comparison or contrast clues.

5. Synonym clues.

Of these categories, "Clues derived from language experience or familiar expression" and "Association clues" were used extensively even though they did not assist in the correct identification of a word represented by a simulated word. Forty per cent of the clues specified by the students were classifiable in the category "Clues derived from language experience or familiar expression," and 42 per cent of the specified clues were classifiable within the category "Association clues." The clues of the remaining categories were not

specified to any extent. Only 7 per cent of the clues specified by the students in their incorrect responses were considered unclassifiable.

Table VIII also presents a percentage comparison of the classification of clues specified by students in their correct identifications with the classification of clues specified in their incorrect identifications. These data indicate that the largest percentage differences appear in the categories "Clues derived from language experience or familiar expression," "Referral clues," and "Association clues." "Association clues" were specified in the incorrect identifications 23 per cent more than in the correct identifications. "Clues derived from language experience or familiar expression" were specified in 13 per cent more correct than incorrect identifications. "Referral clues" were specified in 10 per cent more of the correct identifications than the incorrect identifications. As stated previously, clues of the remaining categories were specified rarely and the percentage differences in these categories were small or nil.

From the data presented in Table VIII it is evident that "Clues derived from language experience or familiar expression" substantially assisted the pupils in making the correct identification of words represented by simulated words. Clues of the remaining categories do not appear to be of particular assistance in the correct identification of words represented by simulated words. "Association clues" do, in fact, appear to have resulted in a greater number of incorrect than correct identifications.

These findings do emphasize the importance of teaching the student to develop more precision in the knowledge and use of words and also the importance of acquainting the students with the more flexible use of structures of the language to attain more precise communication.

These findings suggest that the students in this study have drawn on very broad language experience levels to provide clues to the identification of an unknown word. "Clues derived from language experience or familiar expression" and "Association clues" are not necessarily associated with the immediate contextual situation. The first of these categories specifies clues which may be drawn from the very broad past language experience of the student. Similarly, "Association clues" are not necessarily the associations made within the context of the discourse but may be those formed through unrestricted association. Clearly, the students were, for the most part, unable to use the immediate contextual situation to provide clues to the identification of the unknown word.

Form Class Agreement of Word to be Identified and Word Identified by Students

Entwistle (16) in her studies of word associations of young children reports a striking increase in paradigmatic responding between kindergarten children and students of the fifth grade level. She reports: "For every form class and frequency division of stimulus words, commonality increases from kindergarten to fifth grade." (16: 56) This means, then, that at the fifth grade level one may expect the

responses of children on word association tests to fit the grammatic

paradigm of the stimulus word. One may question the appropriateness

of the findings of word association studies, where the association is

not constrained, to this study where the association is constrained to

the context of the story selected for treatment. However, Deese states

that even where there is semantic constraint, "the distribution of

verbal elements is very much like what one would expect from simple

associative processes. The syntactic and semantic constraint provided

by words in ordinary sentences do not eliminate or replace associative

responses." (12: 170)

With the above in mind, the researcher examined the incorrect

responses of the students in their attempts to identify words represented

by simulated words in particular contextual situations. The findings

of this examination are presented in Table IX.

The data presented in Table IX indicate that incorrect responses

of the students were largely of the same form class as the word

represented by a simulated word. In the students' responses to verbs

represented by simulated words, 98 per cent of their incorrect

responses were verbs. That is, when the word to be identified was a

verb, the students responded with a verb, but not the correct verb.

In responding to nouns represented by simulated word, 95 per cent of

their incorrect responses were nouns. In responding to adjectives

represented by simulated words, 72 per cent of their incorrect

responses were adjectives, 10 per cent were nouns, 8.5 per cent were

verbs and 10 per cent were adverbs.

TABLE IX

FORM CLASS AGREEMENT OF WORD TO BE IDENTIFIED AND
WORD IDENTIFIED BY STUDENTS

Form class of simulated words	Form class of student responses to simulated words			
	Nouns	Verbs	Adjectives	Adverbs
Verbs	1%	98 %	0.4%	0.4%
Nouns	95	3.9	1	0
Adjectives	10	8.5	72	10

The lower form class agreement for adjectives may be partially explained by the fact that many nouns and verbs can traditionally function as adjectives in the language. For example, consider the following sentences:

a) The chief is sleeping.

b) The chief man lives there.

c) The horse is running.

d) The running horse appeared tired.

In sentence a) <u>chief</u> is a noun, but in sentence b) <u>chief</u> is an adjective. Similarly, in sentence c) <u>running</u> is a verb, but in sentence d) <u>running</u> is an adjective. Adjectives also serve as stems from which nouns and adverbs are formed by the derivational suffixes "ness" and "ly." For example:

strange (adjective)   strangeness (noun)   strangly (adverb)

Similarly, adjectives may be formed by the addition of a derivational suffix to a verb. Consider the following examples:

Verb	Adjective
remark	remarkable
understand	understandable

These examples assist in the interpretation of the form class agreement data for adjectives. The fact that nouns and verbs may occupy the same sentence position as adjectives, that adjectives may serve as stems from which nouns and adverbs are formed, and that adjectives may be formed by the addition of derivational suffixes to verbs may partially explain the lower form class agreement for adjectives.

Because of the relationship between adjectives and nouns, verbs, and adverbs briefly described above, it is reasonable that the students, in their identifications of adjectives represented by simulated words, might substitute words of the remaining three form classes.

These findings concur with Entwistle (16) and Palermo and Jenkins (42), who found in their word association studies that by the fifth grade there is a high degree of commonality in the grammatical paradigm of the stimulus words and the response words. In this study it is evident that in the students' inaccurate identifications of words represented by simulated words, their inaccurate identifications were, for the most part, of the same form class as the correct word.

The high degree of commonality in the grammatical paradigm of the stimulus and response words suggests that these students have developed an expectancy for language to be used in particular ways. This may aid in explaining their heavy reliance on the very broad levels of language experience to provide clues to the identification of an unknown word.

The Location in the Context of Words Identified by the Students as Clues

To obtain some indication of where in the discourse the students were looking for clues in their attempts to identify a word represented by a simulated word, an analysis of their incorrect and correct responses and the accompanying verbalizations about which clues in the verbal context assisted them in identifying a word represented by a simulated word was conducted. The criteria used in this analysis are

presented in Table X. A brief description of the criteria follows.

1. Same Sentence: The student identified as clues a word or words in the same sentence, previous to, following, or previous to and following the simulated word.

2. Same Paragraph: The student identified as clues a word or words in the same paragraph but not in the same sentence prior to or following the simulated word.

3. Same Page: The student identified as clues a word or words on the same page but not in the same paragraph or sentence prior to or following the simulated word.

4. Previous Page: The student identified as clues a word or words on the page previous to the simulated word, but not in the same paragraph.

5. Following Page: The student identified as clues a word or words on the page following the simulated word, but not in the same paragraph.

The findings of this analysis are presented in Figure 2. The students in their identification of words represented by simulated words in particular contextual situations relied heavily on clues in the sentence which contained the simulated word. The students who produced correctly identified words represented by simulated words identified as clues words following the simulated word and clues prior to and following the simulated word to a greater extent than those who produced incorrect identifications. It is also evident that the students who produced correct identifications used, to a greater

TABLE X

CRITERIA FOR EVALUATING LOCATION OF IDENTIFIED CLUES

Location of clue in relation to simulated word	Possible position of clue in relation to simulated word		
	Previous	Following	Previous and following
1. In same sentence	X	X	X
2. In same paragraph	X	X	
3. On same page	X	X	
4. On previous page	X		
5. On following page		X	

FIGURE 2

LOCATION OF IDENTIFIED WORD CLUES IN RELATION TO SIMULATED WORD

extent than those who did not, clues in the same paragraph but not in the same sentence and also clues prior to the simulated word. Students who produced incorrect responses to words represented by simulated words identified as clues, words following the simulated word and in the same paragraph, previous to the simulated word and on the same page, and from the previous page. However, the number of clues identified from these locations is very small. These locations were not used by students who produced correct identifications. No clues were identified on the page following the simulated word.

The above findings indicate that students rely heavily on the immediate sentence context to provide clues to assist them in the identification of an unknown word. One possible explanation for the above finding may be that students at this age level are still largely concerned with the here and now. Consequently, they appear to expect the immediate sentence context to provide clues to the identification of unknown words. Also, these students may not have been taught to examine broader portions of context for clues to assist them in the accurate perception of an unknown word. In addition, many of the activities used in current teaching practice to teach the student to use context clues as an aid to accurate word perception are constructed using very limited portions of written discourse. The context usually provided in these activities is rarely greater than one sentence in length.

Incorrect Identifications Considered as Reasonable Substitutions

While the majority of student identifications of words represented by simulated words were incorrect, some of their incorrect responses were considered as reasonable substitutions. For this tabulation the total number of 726 incorrect identifications were examined. These reasonable identifications are presented in Table XI.

The data presented in Table XI indicate that a total of ninety-eight incorrect identifications were considered as reasonable in their particular contextual situations. These reasonable identifications constitute approximately 13 per cent of the total number of incorrect responses. This means, then, that not only are students at the fifth grade not as able to accurately identify a word represented by a simu-lated word in a particular contextual situation as had been anticipated by the researcher, but also more than four fifths of their incorrect identifications are unreasonable answers. These findings suggest that the students in this study were clearly unable to use context clues to identify words with an acceptable degree of precision.

Sentence Sense as a Clue to the Identification of Words Represented
  by Simulated Words

Miller (38) suggests that as children gain more experience with language there is growing comprehension of the sentence as a stable grammatical pattern. This means, then, that with the increasing experience in language usage students gradually become aware of particular regularities in the position of words in the grammatical pattern of the sentence. It is the application of this awareness

TABLE XI

REASONABLE IDENTIFICATIONS OF WORDS REPRESENTED BY SIMULATED WORDS

Word to be identified	Contextual situation	Reasonable identification	Frequency
No. 1 Obtain	During the months of experimentation he had noted that by varying the quantity of each chemical, by changing the intensity of the heat and by stirring or not stirring he could _____ mixtures with different properties.	Concoct Create Produce	1 1 1
No. 2 Room	Suddenly the mixture began boiling violently, and hot particles were spewn all over the _____.	Lab Place	3 4
No. 3 Mysterious	Whatever this _____ substance was, it was not varnish.	Unusual Queer Strange	1 2 2
No. 7 Three	In this tale the _____ princes were always discovering by chance things they were not seeking.	Handsome	3
No. 8 Turn	Charles Goodyear had spent years trying to find a means of processing rubber so that it would not _____ into goo in the summer heat or become stiff and brittle in the winter cold.	Melt Change	20 1
No. 9 Evening	Then one _____ when Charles was showing a bit of rubber to a friend, he accidentally dropped it onto a hot stove.	Day	32

TABLE XI (continued)

Word to be identified		Contextual situation	Reasonable identification	Frequency
No. 10	Dance	Suddenly Charles began to _____ around the room like a man gone crazy.	Run Race Rush	9 2 1
No. 13	Used	Later he _____ the plate to take a picture of some scenery.	Needed	1
No. 14	Professor	The _____ traced his steps back to the laboratory where he had kept the plate.	Scientist	7
No. 16	Accidents	So, through a series of seemingly unrelated _____ and thanks to a very absent minded professor--medical science obtained one of its most useful tools: x-ray.	Mishaps	1
No. 18	Day	One _____ a friend and fellow scientist came into the Curies' laboratory and showed Pierre a burn on his abdomen.	Afternoon Morning	4 2
			Total	98

that the researcher considered to constitute sentence sense as a clue to the identification of a word represented by a simulated word.

Examination of the student responses indicated that the students frequently provided sentence sense as a reason for their identification of a word represented by a simulated word. Examples of these responses are presented in Table XII. These examples show that the student made his particular identification because it seemed, to him, a reasonable choice for insertion in the contextual situation provided.

The use of sentence sense as a clue to the identification of a word represented by a simulated word appears to have substantially assisted the students in the correct identifications of words represented by simulated words. Table XIII shows that in their correct identifications of words represented by simulated words students provided sentence sense as the clue which assisted them eighty-two times, this being 53.2 per cent of the total number of correct identifications. This finding would support the suggestion that as students become increasingly able to comprehend the sentence as a stable grammatical pattern they are more able to apply this comprehension to the accurate perception of an unknown word. However, the student responses appear to indicate that this is not a conscious awareness in that they cannot pinpoint just what is assisting them in their identifications.

This finding, in conjunction with the findings presented in Figure 2, emphasizes the importance of the immediate sentence context in providing clues to the perception of an unknown word. Figure 2 indicated that the students heavily relied on the immediate sentence

TABLE XII

EXAMPLES OF SENTENCE SENSE AS A CLUE TO WORD IDENTIFICATIONS

Student identification	Reason provided by student
Make	"Well, it fits in there."
Place	"Well, it goes in the sentence again."
Stop	"Well, it goes with the sentence, coined a stop for such happy accidents."
Beautiful	"It fits in the sentence."
Used	"Well, it goes good with the sentence."

TABLE XIII

SENTENCE SENSE CLUES TO CORRECT WORD IDENTIFICATION

Total number of correct identifications	Frequency of sentence sense as clue to identification	Percentage of sentence sense clues used in total number of correct identifications
154	82	53.2

context to provide a clue to the identification of a simulated word.
The findings presented in Table XIII indicated that sentence sense
served as a clue to a substantial number of correct identifications.
Together these findings suggest that not only does the students'
comprehension of the sentence as a stable grammatical pattern contribute
to accurate word perception half of the time, but the students also
expect the immediate sentence context to provide clues to the
perception of an unknown word.

III. SUMMARY

The results of analysis of the findings with respect to the
stated hypotheses indicate that students at the fifth grade level are
not well able to verbally identify correctly a word represented by a
simulated word in a particular printed contextual situation. The majority
of student verbalizations about which clues in the printed context
assisted them in the correct identification of a word represented by
a simulated word are classifiable within the Ames scheme. However,
it appeared that the students relied heavily on the categories
representative of the very broad levels of language experience. Those
categories requiring precision in the use of language and a knowledge
of the structure of language were rarely used.

Of the variables selected for control in this study a
significantly positive correlation exists between reading ability,
listening ability, verbal ability, and the criterion score. Reading
ability and listening ability appear to be the most powerful

predictors of the ability of students to verbalize about which clues in the printed verbal context assisted them in the correct identification of a word represented by a simulated word in a particular contextual situation.

The material presented in the remaining portion of the chapter was the result of an analysis of the student responses in a variety of ways in order to gain more information concerning the use of context clues by students at the fifth grade level. From this analysis it is evident that of the categories specified in the Ames scheme the students were able to successfully use clues of only one category. The majority of their identified clues were classifiable within the category "Clues derived from language experience or familiar expression." This analysis has also shown that for the most part the incorrect identifications by the students of words represented by simulated words in particular contextual situations are of the same form class as the correct word. The students appeared to rely heavily on the immediate sentence context to provide clues to the identification of words represented by simulated words in particular contextual situations. Finally, the students' comprehension of the sentence as a stable grammatical pattern, or sentence sense, appears to contribute sub-stantially to the identification of an unknown word.

CHAPTER VI

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND SUGGESTIONS

FOR FURTHER RESEARCH

I. SUMMARY

The purpose of this study was to investigate the ability of
students in the fifth grade to verbally identify correctly a word
represented by a simulated word in selected basal reading materials and
to assess their ability to verbalize about which clues in the verbal
context assisted them in making their correct identifications. The
ability to verbally identify correctly a simulated word and the ability
to verbalize about the correct identification were considered to
constitute the awareness of context clues in selected basal reading
materials.

The test sample for the study was randomly selected from eight
fifth grade classes in the Edmonton Public School system. To ensure a
diversity of socio-economic background, administrative offficials of the
Edmonton Public School system were asked to select two classes from four
socio-economic areas: professional, highly skilled, semi-skilled, and
unskilled. Five students were randomly selected from each of these
classes, yielding a test sample of forty.

All tests were administered by the researcher. The standard-
ized tests (Appendix B) were administered to the ten students selected
from each school on a group basis. The Context Clues Test (Appendix A)
was administered to each student individually. The student responses
to the Context Clues Test were tape recorded and typescripts were

produced from these recordings.

The analysis of the data with respect to the hypotheses consisted of a tabulation of the number of correct identifications of a word represented by a simulated word in a particular contextual situation and a tabulation of the number of verbalizations about which clues in the verbal context assisted in the correct identification of a word represented by a simulated word and were classifiable within the Ames scheme.

Also included in this analysis was the calculation of the correlation between the selected variables and the ability to verbalize about which clues in the verbal context assisted the students in the correct identification of a word represented by a simulated word in a particular contextual situation. The power of each of the variables as predictors of the ability to verbalize about which clues in the context assisted in the correct identification of a word represented by a simulated word was also assessed using Stepwise Multiple Linear Regression technique.

Further analysis of the student responses was conducted to gain more information about the use of context clues by fifth grade students using selected basal reading materials. This analysis included: the use of the context clues specified by the Ames scheme by students at the fifth grade level using selected basal reading material, the form class agreement of the word represented by a simulated word and the incorrect responses, the location of words identified as clues by the students, the responses that were incorrect

but could be considered as reasonable substitutions, and the use of sentence sense as a clue to a word represented by a simulated word in particular printed contextual situations.

II. SUMMARY OF MAIN FINDINGS AND CONCLUSIONS

The main findings and the conclusions drawn from them are presented with respect to the hypotheses.

Hypothesis One:

Students at the fifth grade level are not able to verbally identify correctly a word represented by a simulated word in a particular printed contextual situation.

Analysis of the data would tend to support the retention of this hypothesis. The students accurately identified only 17.5 per cent of the words represented by simulated words in particular printed contextual situations.

This finding suggests, therefore that students at the fifth grade level are not well able to verbally identify correctly a word represented by a simulated word in a particular printed contextual situation.

Hypothesis Two:

Students at the fifth grade level are not able to verbalize about which clues in the printed verbal context assisted them in the correct identification of a word represented by a simulated word in a particular printed contextual situation.

Analysis of the data would support the rejection of this hypothesis. Of the total number of verbalizations about clues which assisted in the correct identification of a word represented by a simulated word in particular contextual situations, 93 per cent were

classifiable within the Ames scheme.

This finding suggests that students at the fifth grade level are able to verbally identify context clues which assisted them in the accurate identification of an unknown word.

Hypothesis Three:

There is no relationship between the reading ability, mental ability, chronological age, sex, listening ability and the ability of fifth grade students to verbalize about which clues in the printed verbal context assisted them in the correct identification of a word represented by a simulated word in a particular printed contextual situation.

Analysis of the data indicates that there is a strong positive correlation between the ability of fifth grade students to verbalize about which clues in the verbal context assist them in identifying correctly a word represented by a simulated word and their reading ability, listening ability, and verbal I.Q.

Of the variables selected, reading ability and listening ability are the most powerful predictors of the ability to verbalize about which clues in the verbal context assist in the correct identification of a word represented by a simulated word.

As stated in Chapter I, this study is concerned with the awareness of fifth grade students of context clues in selected basal reading materials. This awareness was considered to be constituted of the ability to verbally and accurately identify a word represented by a simulated word and the ability to verbalize about which clues in the verbal context assisted them in making the identification. The data indicated that these students were not well able to accurately

identify a word represented by a simulated word in particular contextual situations but they were able to verbalize about which clues in the printed verbal context assisted them in making their identifications. Therefore, it seems reasonable to conclude that while these students were able to identify clues which assisted them, there were many other clues which did not assist them.

The following findings resulted from the examination of the student responses in order to gain more information concerning the use of context clues as aids to word perception:

Of the context clues identified and classified by Ames, the clues of only one category ("Clues derived from language experience or familiar expression") appear to substantially assist fifth grade students in their attempts to accurately identify words represented by simulated words in selected basal reading materials.

The incorrect identifications of words represented by simulated words in selected basal reading materials are for the most part of the same form class as the correct word.

The number of incorrect but reasonable identifications of words represented by simulated words in selected basal reading materials is small.

Students at the fifth grade level in their correct and incorrect identifications of words represented by simulated words in selected basal reading materials rely extensively on the immediate sentence context to provide clues to the identification of a word represented by a simulated word.

The use of sentence sense as a clue to the identification of words represented by simulated words in selected basal reading material appears to result in a substantially higher number of correct identifications than incorrect identifications.

The following conclusions are drawn from the above findings:

Fifth grade students in their attempts to identify unknown words in any contextual situations are not well able to successfully use the context to provide clues to assist them in their identifications. The students appear to rely extensively on very broad levels of experience to provide these clues.

Fifth grade students in their attempts to identify an unknown word in a particular contextual situation do not appear to use words in a way that enables them to communicate with precision. The majority of their identifications will be of the same form class as the correct word but only a very small percentage of their identifications will be considered as even reasonable meaning substitutions.

The immediate sentence context of an unknown word appears to be useful as a source for clues to the identification of an unknown word. Students' comprehension of the sentence as a stable grammatical pattern will result in a substantial percentage of correct identifications of unknown words in particular contextual situations.

III. IMPLICATIONS

This study has shown that the awareness of context clues by students at the fifth grade level using selected basal reading material is positively correlated with the general reading ability and listening ability of the students. Because the use of context clues as an aid to word perception is a skill that students of greater reading and listening ability are able to use successfully, directed attention on the development of the ability to use context clues will result in even greater reading and listening ability. It also follows that an integrated language arts-communication skills program with specific lessons in all language arts could provide additional opportunity for developing the students' ability to use context clues. It also follows that because students who have had the opportunity of extensive experience with language are more able to successfully use context clues as an aid to word perception, the provision for more quantitative and qualitative opportunities to use language may enable students to better use context clues as a word perception skill.

The students in this study were not well able to correctly identify, or provide a reasonable substitution for, the words represented by the simulated words. They were, however, well able to specify which words in the context served as the clues which assisted them in making their identifications. One reason for this situation could be that these students have not developed sufficient precision for meanings of words. Therefore, it seems logical that instruction in the use of context clues as an aid to accurate word perception should emphasize

and encourage increasing precision in the use of words. In using

context clues as an aid to the accurate perception of an unknown word,

the students must be encouraged to continually check their perceptions

in order that the most precise perception is attained.

This study has shown that fifth grade students rely heavily on

the immediate sentence context to provide clues to assist them in the

identification of an unknown word. Instruction in the use of context

clues as aids to accurate word perception might well capitalize on

this fact. In the initial stages of instruction every attempt should

be made to incorporate context clues in the immediate sentence context

and students should be carefully instructed to examine the immediate

sentence context for clues which may aid in the accurate perception of

an unknown word. As well, instruction in the use of this word perception

skill should provide for the examination of increasingly more remote

portions of context for clues which may assist in the accurate

perception of a word.

When the students in this study did not use the immediate

sentence context to provide clues, they used extensively those clues

not confined necessarily to a particular contextual situation, but

drew instead from their broad levels of language experience and their

ability to form free associations. Keeping in mind that they were

quite unable to accurately identify the words represented by the

simulated words, this would imply that instruction in the use of context

clues as an aid to accurate word perception would better concentrate

on the use of particular clues in the contextual situation at hand. For

example, this instruction might include the use of modifying phrases

and clauses as a clue to an unknown word, the use as clues of

comparisons or contrasts of words, phrases, clauses, or ideas present

in the context, and the use of a synonym in the context as a clue to

the recognition of an unknown word.

The fact that students' comprehension of a sentence as a stable

grammatical pattern appeared to substantially assist them in making

correct identifications again emphasizes the importance of teaching

the students these grammatical patterns.

IV. SUGGESTIONS FOR FURTHER RESEARCH

A recognized limitation of this study was the use of the

material of one author in the construction of the Context Clues Test.

A study using materials of more than one author and following the

procedures used in this study may provide more information concerning

the use of context clues by students at the fifth grade level.

A study designed to assess the ability of students to interpret

the meaning of an unknown word through context rather than just to

identify the word as in this study may provide further indication of

the use of context clues as aids to accurate word perception.

Because the ability of students to comprehend the sentence as

a stable grammatical pattern appears to assist them in the identifica-

tion of an unknown word, further study to assess the developmental

nature of sentences may be of value.

A study designed to assess the ability of students from a

variety of grade levels to use context clues specified in classification

schemes, for example, those of Ames, Artley, and McCullough, would

indicate whether or not the ability to use these specified clues was or

was not developmental in nature. Such a study might involve the

contrivance of contextual situations in which particular clues are

incorporated and the assessment of the ability of the students to

use these clues in the perception of unknown words.

A study concerning the program in current basal reading materials

for the teaching of context clues as aids to word perception would

provide some indication of their merit. Such a study might involve an

evaluation of the quantity and quality of these activities.

V.   CONCLUDING STATEMENT

In this study, the awareness of fifth grade students of context

clues in selected basal reading material was examined. This awareness

was considered to be constituted of the ability of the students to

accurately identify a word represented by a simulated word and their

ability to verbalize about which clues in the printed verbal context

assisted them in making their identifications. The analysis of the

data has shown that while the students are able to verbalize about

which clues in the printed verbal context assisted them in making

their identifications, their identifications were for the most part

inaccurate, suggesting that one reason may be their lack of knowledge

of the precise meanings of words.

These students also appeared to have relied heavily on their

very broad past experiences with language to provide a clue to the
identification of an unknown word, suggesting again their lack of
knowledge of precise meanings of words. The students were quite
unable to successfully use the categories of clues requiring greater
precision or more knowledge of the structure of the language.

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APPENDIXES

APPENDIX A

CONTEXT CLUES TEST

HAPPY ACCIDENTS

Leo Baekeland increased the amounts of formaldehyde and carbolic acid in the beaker and turned the flame higher than usual.

During the months of experimentation he had noted that by varying the quantity of each chemical, by changing the intensity of the heat, and by stirring or not stirring, he could gkibost mixtures with different properties. Although he could not determine beforehand what kind of mixture he would get, one thing was certain: he was on the right track. Eventually this process would result in a better varnish.

Suddenly the mixture began boiling violently, and hot particles were spewn all over the quoetol. Baekeland and his assistant dived for cover. As they peered

from their shelter, the mixture began to
overflow the beaker, gradually stopped
boiling, and started to harden.

Cautiously Baekeland approached the
beaker and turned off the gas. Then he
examined the hard mass that had formed
on its sides. Whatever this fdotmak
substance was, it was not varnish!

It was a stubborn gray mass. Its
very stubbornness, Baekeland realized,
was what would make it valuable. Now a
way to shape it had to be found.

Day after day Baekeland and his
assistant tried to soften the irregular
gray mass. But regardless of what they
klasted, nothing had any effect on it--
neither chemicals, intense heat, pressure,
nor electrical current.

Months of unsuccessful experiments
followed. Finally a method of molding the
substance was discovered in 1909. The

name given this new discovery was

"Bakelite," and with it began what is

one of today's biggest industries:

<u>heltuns</u>.

In 1754 an English writer by the

name of Horace Walpole, coined a

Leo Baekeland is only one of count-

less scientists who have set out in search

of one thing and through an accident or

unforeseen event have discovered something

else--often more valuable than what they

were seeking.

In 1754 an English writer by the

name of Horace Walpole, coined a

<u>teprist</u> for such "happy accidents":

serendipity. It means "the ability to

find unexpected things that are often

more valuable or agreeable than the things

sought after." The word comes from

Serendip, the name of a country in the

fifth-century fairy tale "The Three

Princes of Serendip." In this tale, the

<u>luptrea</u> princes were always discovering

by chance things they were not seeking.

The history of scientific inquiry
is filled with examples of serendipity
and the frontiers of science have been
advanced greatly because of it.

Charles Goodyear had spent years
trying to find a means of processing rubber
so that it would not choptle into goo in
the summer heat or become stiff and
brittle in the winter cold. By 1839
he knew he was closer to solving the
problem than he had ever been. He was
getting fairly good results by adding
sulphur to melted crude rubber. But
something was still missing.

Then one abontsk when Charles was
showing a bit of rubber to a friend,
he accidentally dropped it onto a hot
stove. Disgustedly, Charles dipped a
second spoonful of rubber from the kettle.
Then he scraped the "ruined" bit of
rubber from the stove with an iron poker.

Suddenly Charles began to kodpacd around the room like a man gone crazy. He dashed out of the house and thrust the piece of rubber into a snowbank to test it.

At last he had found the answer! This rubber, mixed with sulphur and then exposed to intense heat, was flexible in cold yet monfrod in heat.

The accidental dropping of that bit of rubber led to the development of the process--vulcanization of rubber--which makes thousands of useful rubber products possible.

One day in the year 1895 an absent-minded professor, Wilhelm von Roentgen, was working in a laboratory in Germany. When he wontopk the lab, he forgot to disconnect the electric current to the vacuum tube he had been using in his study of cathode rays.

The professor, whose hobby was

photography, had also left an unexposed photographic plate under a stack of books on a table in the same room. Later he blesned the plate to take a picture of some scenery. When he developed the picture, he was puzzled by a shadow that appeared right in the middle of it. The shadow had the distinct shape of a key.

But how did it get in the middle of the picture? The abbocdt traced his steps back to the laboratory where he had kept the plate. Oh yes, it had been underneath that stack of books.

He studied the outline of the key. It was shaped exactly like his office key which he had misplaced again. Now, where was it this time? Oh, yes. He had crupted it as a bookmark.

The professor picked up a book from the table and shook it. Out dropped the office key.

Then he remembered that the plate had been in the room when the cathode ray tube had been accidentally left burning.

So, through a series of seemingly unrelated gosbins--and thanks to a very absent-minded professor--medical science obtained one of its most useful tools: X-ray.

In the late 1800's a husband-and-wife team of researchers, Marie and Pierre Curie, made scientific history with the discovery of radium. This discovery changed many theories about the atom and the composition of roxtopk. This alone would have been enough to impress the scientific world and to make the names of the Curies immortal. Even so, the Curies were not satisfied. True, they had made a great discovery. But they realized that there was much more to be learned about this mysterious substance.

One spignde a friend and fellow

scientist came into the Curies' laboratory

and showed Pierre a burn on his abdomen.

Radium, he told Pierre, had caused it.

About a week before, he had put a piece

of radium in his coat pocket and had

forgotten about it for several hours. The

knouktd had appeared a few days later, and

although it looked as though it should be

painful, it did not hurt at all.

Why did radium burn the skin? What

would happen to skin which had been burned?

Question piled upon question and the Curies

had to find the answers. They plosted

further research which led to the discovery

that radium, which could painlessly burn

human flesh, could be used in treating

diseases of the skin and body tissue,

especially cancer.

Not only is the history of scientific

inquiry filled with stories of such "happy

accidents" as these, so is the <u>qranstk</u>
of the world.

Ponce de Leon was looking for the
Fountain of Youth and discovered Florida.

Columbus set out in search of a new
route to the Indies and discovered North
America.

Even your own life is filled with
examples of serendipity. A trip to the
beach--a pleasant <u>ifsoble</u> in itself--
could become even more pleasant if while
there you met the person who would
eventually become your best friend.

Serendipity: that Walpole coined
a word with such an interesting history
is in itself a very "happy accident."

APPENDIX B

STANDARDIZED TESTS

Cooperative School and College Ability Tests

School Ability Test

(ETS) Cooperative Test Division · Educational Testing Service · Princeton, N. J. · Los Angeles 27, Calif.

Form **5** A

General Directions

This is a test of some of the skills you have been learning ever since you first entered school. You should take it in the same way that you would work on any other new and interesting assignment.

The test is divided into four parts, which you will take one at a time. Give each one your close attention and do your best on every question. You probably will find some of the questions quite easy and others more difficult. You are *not* expected to answer every question correctly.

There are a few general rules for taking this test that will help you to earn your best score:

* Work carefully, but do not spend too much time on any one question. It usually is better to answer first all of the questions in the part that you know well and can answer quickly. Then go back to the questions that you want to think about.

* If you work at average speed you will have plenty of time to read and answer all of the questions. By leaving until last the questions that are most difficult, you will make best use of your time.

* You may answer questions even when you are not perfectly sure that your answers are correct. Your score will be the number of correct answers you mark.

* Put *all* of your answers on the answer sheet. This test booklet should not be marked in any way. Your examiner will give you an extra sheet of scratch paper to use when you do the number problems.

* Fill in all the information called for on the answer sheet and PRINT your name so that it can be read.

* Make sure that you understand instructions *before* you start work on any part. Ask the examiner to repeat the instructions if you do not understand exactly what you are to do.

* Make your answer marks on the answer sheet heavy and black. If you change your mind about an answer, be sure to erase your first mark completely.

If you give this test your best effort, your score will provide a good estimate of your ability in these important skills.

DIRECTIONS FOR PART I

Each question in Part I consists of a sentence in which one word is missing; a blank indicates where the word has been removed from the sentence. Beneath each sentence are five words, one of which is the missing word. You are to select the missing word by deciding which one of the five words *best* fits in with the meaning of the sentence.

Sample Question

We had worked hard all day so that by evening we were quite ( ).

A small   **B** tired   **C** old
D untrained   **E** intelligent

If you understand the sample sentence you will realize that "tired" is the missing word because none of the other words fits in with the meaning of the sentence. Next, on the answer sheet, you find the line numbered the same as the question and blacken the space which has the same letter as the missing word. Because "tired" is the correct word to use in the sample sentence, and its letter is **B**, the space marked **B** on the answer sheet is blackened. See how it has been marked on the answer sheet. Do *not* make any marks in your test booklet.

Do not turn this page until you are told to do so.

A

PART I / TIME: 15 MINUTES

1 Look both ways before you (   ) the street.

   A see **B** cross **C** leave
   D fill **E** block

2 The woodcutter sharpened his axe and went into the forest to cut down some (   ).

   F bushes **G** weeds **H** trees
   J flowers **K** plants

3 When they were (   ), they ate.

   A fighting **B** asleep **C** lost
   D running **E** hungry

4 During the last war (   ) was hard to get, and so most people did not use their cars much.

   F butter **G** clothing **H** soap
   J candy **K** gasoline

5 The boy was so out of breath from running that he was (   ).

   A panting **B** singing **C** chatting
   D laughing **E** jumping

6 The most helpful thing to do if you (   ) something is to look for it.

   F lose **G** hit **H** make
   J find **K** explore

7 Anyone can shoot a rabbit, but it takes (   ) to hunt a tiger.

   A virtue **B** honesty **C** defiance
   D a child **E** courage

8 Men riding on the Pony Express crossed the Indian country but had orders not to (   ) unless surrounded.

   F gallop **G** eat **H** sleep
   J shoot **K** mount

9 Tiny germs can make a big man sick; so power cannot always be measured by (   ).

   A shape **B** speed **C** size
   D age **E** color

10 Marty was a (   ) boy who was never willing to share anything.

   F kind **G** loving **H** helpful
   J selfish **K** lazy

11 Jerry's dog was (   ), but he kept limping along behind his master.

   A lonely **B** playful **C** barking
   D lame **E** hungry

12 Snow swirled down the valley, and the wind blew so (   ) that the boys who carried the milk to the cottage arrived with numbed fingers.

   F wildly **G** loudly **H** helplessly
   J bitterly **K** softly

13 The beggar held the (   ) bit of bread in his hand.

   A large **B** precious **C** right
   D grateful **E** returned

14 Mary carefully folded each garment and put it in the bureau drawer, for she was very (   ) about her personal belongings.

   F careless **G** selfish **H** neat
   J unconcerned **K** annoyed

15 Mother's face showed that she was (   ), for she found happiness in her new home.

   A contented **B** worried **C** hungry
   D wondering **E** thinking

16 From the back room came the (   ) of tiny silver bells.

   F clanging **G** booming **H** jangling
   J pealing **K** tinkling

17 Since people who can read and write well usually get better-paying jobs, hard work in school may be (   ).

   A unnecessary **B** unwise
   C valuable **D** difficult **E** dull

Go on to the next page.

18 Disappointed at the thought of returning without his rich prize of ivory, the ailing hunter (   ) gave orders to turn back and leave the jungle.

F happily   G nevertheless
H smilingly   J willingly   K clearly

19 The rescuers (   ) when the little cat crawled safely from the hole.

A ran   B cheered   C fussed
D complained   E frowned

20 A sick man's symptom is only a (   ) to the doctor; it is like a clue to the detective.

F tale   G shadow   H criminal
J hint   K sorrow

21 Because Columbus never found the riches of the East, King Ferdinand and Queen Isabella, with their almost empty treasury, considered the explorer a (   ).

A failure   B liar   C hero
D tyrant   E rogue

22 His long (   ) gave him wisdom.

F beard   G invention   H days
J walk   K experience

23 The giant scowled so (   ) that the frightened people's teeth began to fall out.

A pleasantly   B savagely
C strongly   D loudly   E broadly

24 Traveling by stagecoach in the gold-rush days was very (   ) because of the many bandits robbing the passengers.

F comfortable   G perilous   H fast
J entertaining   K expensive

25 The wind almost knocked the weary traveler off his feet as he (   ) along in the deep snow, but he managed to reach the cabin.

A ran   B shuffled   C floundered
D wriggled   E flounced

STOP *Stop. If you finish before time is called, check your work on this part. Do not go on to Part II until you are told to do so.*

DIRECTIONS FOR PART II

There are 25 problems in Part II of the test. Following each problem there are five suggested answers. Work each problem in your head or on a piece of scratch paper. Then look at the five suggested answers and decide which one is correct. Blacken the space under its letter on the answer sheet.

Because the correct answer to the sample problem is 586, which is lettered **F**, the space marked **F** on the answer sheet is blackened. See how it has been marked on the answer sheet. Do *not* make any marks in your test booklet.

Sample Problem

$$\begin{array}{r} 5413 \\ -4827 \\ \hline \end{array}$$

F 586   G 596   H 696
J 1586   K None of these

Do not turn this page until you are told to do so.

PART II / TIME: 20 MINUTES

1   17
  − 9

A 6
B 8
C 9
D 12
E None of these

2   29
 +17

F 12
G 36
H 43
J 56
K None of these

3   28
    59
    94
 +96

A 256
B 257
C 267
D 277
E None of these

4 5)355

F 61
G 70
H 71
J 710
K None of these

5   1111
 + 999

A 2000
B 2010
C 2100
D 2110
E None of these

6 $\frac{1}{3}$
 + $\frac{1}{3}$

F $\frac{1}{2}$
G $\frac{2}{3}$
H $\frac{8}{9}$
J $1\frac{1}{3}$
K None of these

7   821
 −514

A 207
B 307
C 310
D 317
E None of these

8 $\frac{246}{6} = (?)$

F 4
G 40
H 46
J 410
K None of these

9 930 − 658 = (?)

A 280
B 282
C 372
D 382
E None of these

10   8.09
 +24.76

F 22.75
G 22.85
H 32.75
J 32.85
K None of these

11   6007
 − 3928

A 179
B 1079
C 2079
D 2179
E None of these

12 $\frac{5}{7}$
 − $\frac{2}{7}$

F $\frac{3}{14}$
G $\frac{2}{7}$
H $\frac{3}{7}$
J 3
K None of these

13 48.88 + 2.22 = (?)

A 50.00
B 50.10
C 51.00
D 51.10
E None of these

14   184
 × 25

F 1,288
G 3,772
H 4,600
J 37,720
K None of these

15   .33
 × 2

A .066
B .66
C 6.6
D 66
E None of these

6 $\frac{7}{8} - \frac{4}{8} = (?)$

F $\frac{3}{16}$ G $\frac{3}{8}$

H $\frac{5}{8}$ J 3

K None of these

7   60.00
   -28.74

A 21.26
B 31.26
C 42.36
D 48.74
E None of these

8   800
   $\times \ 60$

F   480
G   4,800
H 48,000
J 480,000
K None of these

19 $3\overline{)1821}$

A   60
B   67
C   670
D 1607
E None of these

20 $32\overline{)165}$

F 5   G $5\frac{5}{32}$

H $5\frac{15}{32}$ J $6\frac{5}{32}$

K $6\frac{15}{32}$

21   580
   $\times 304$

A   4,060
B   19,720
C 176,020
D 176,320
E None of these

22 $\frac{1}{6} + \frac{1}{6} = (?)$

F $\frac{1}{3}$ G $\frac{1}{12}$

H $\frac{2}{12}$ J $\frac{1}{36}$

K None of these

23 $89\overline{)8366}$

A   9.4
B   94
C 904
D 940
E None of these

24 $\frac{3}{7} \times \frac{4}{5} = (?)$

F $\frac{12}{35}$ G $\frac{15}{28}$

H $\frac{7}{12}$ J $\frac{1}{5}$

K None of these

25 $5 - \frac{2}{5} = (?)$

A $\frac{3}{5}$ B 2

C $4\frac{3}{5}$ D $5\frac{3}{5}$

E None of these

Stop. If you finish before time is called, check your work on this part. Do *not* go back to the previous part. Do *not* go on to Part III until you are told to do so.

DIRECTIONS FOR PART III

Each of the questions in Part III consists of one word in large letters followed by five words or phrases in small letters. Read the word in large letters. Then pick, from the words or phrases following it, the one whose meaning is closest to the word in large letters. For example:

Sample Question

chilly

A tired   B nice   C dry
D cold   E sunny

In order to find the correct answer you look at the word **chilly** and then look for a word or phrase below it that has the same or almost the same meaning. When you do this you see that "cold" is the answer because "cold" is closest in meaning to the word "chilly." Next, on the answer sheet you find the line numbered the same as the question and blacken the space which has the same letter as the word you have selected as the correct one. Because "cold" is the correct answer to the sample question, the space marked **D** on the answer sheet is blackened. See how it has been marked on the answer sheet. Do *not* make any mark in your test booklet.

Do not turn this page until you are told to do so.

AT—5A

PART III / TIME: 10 MINUTES

1 large

A clumsy
B big
C strong
D rich
E smart

2 village

F mountain
G large house
H wheel
J rascal
K small town

3 quiet

A almost there
B moving slowly
C soft and smooth
D not noisy
E very sleepy

4 murmur

F cry aloud
G talk softly
H walk on tiptoes
J pray
K heal

5 arrange

A cook
B begin
C scatter
D put in order
E use in a careful way

6 puzzle

F purpose
G large mouth
H brain
J problem
K silly person

7 different

A uneasy
B separate
C unlike
D removed
E strange

8 mischief

F naughtiness
G hatefulness
H horror
J sadness
K swiftness

9 disease

A powder
B illness
C plant
D stoppage
E desire

10 lazy

F asleep
G stupid
H unwilling to work
J sick
K quick to understand

11 vanished

A painted
B disappeared
C conquered
D divided
E explored

12 shear

F decorate
G break open
H put back
J cut off
K collect

13 dazed

A timed
B sharpened
C worried
D chipped
E stunned

14 audience

F noises
G attempts
H actors
J radios
K listeners

15 amaze

A confuse
B pretend
C annoy
D astonish
E discourage

16 sturdy

F strong and hardy
G stubborn
H slow and heavy
J tasteful
K willing to work

17 beaks

A tops
B brakes
C pieces
D rays
E bills

18 assist

F sit quietly
G put aside
H help
J convey
K adjust

SCAT

19 frequent

A easy to see
B permanent
C durable
D done often
E ordinary

20 approach

F ask
G come closer
H guess
J speak loudly
K appear

21 constructed

A surrounded
B put together
C taught
D made stronger
E delivered

22 excite

F caution
G praise
H please
J arouse
K advise

23 competitor

A hard worker
B winner
C enemy
D bad neighbor
E rival

24 thrive

F follow
G desire
H prosper
J obtain
K seek

25 grave

A serious
B dead
C mad
D sandy
E carved

STOP *Stop.* If you finish before time is called, check your work on this part. Do *not* go back to either previous part. Do *not* go on to Part IV until you are told to do so.

DIRECTIONS FOR PART IV

There are 25 problems in Part IV of the test. Following each problem there are five suggested answers. Work each problem in your head or on a piece of scratch paper. Then look at the five suggested answers and decide which one is correct. Blacken the space under its letter on the answer sheet.

Because the correct answer to the sample problem is 8, which is lettered **H**, the space marked **H** on the answer sheet is blackened. See how it has been marked on the answer sheet.

Do *not* make any marks in your test booklet.

Sample Problem

Four $10-bills are equal to how many $5-bills?

F 20   G 10   H 8
J 40   K 2

Do not turn this page until you are told to do so.

AT—SA

PART IV / TIME: 25 MINUTES

1 Amy is 56 inches tall. Joan is 50 inches tall. Amy is how many inches taller than Joan?
A   6
B   16
C   50
D   56
E   106

2 If erasers cost 5 cents each, how many cents do 7 erasers cost?
F   5
G   7
H   12
J   35
K   45

3 Mr. Beem has 79 chickens. If each chicken laid 5 eggs a week, how many eggs should Mr. Beem have each week?
A   84
B   395
C   553
D   1975
E   2765

4 Joan picked 23 tomatoes from her garden on Monday, 36 on Tuesday, and 18 on Wednesday. How many tomatoes did she pick in all during the three days?
F   67
G   77
H   86
J   87
K   96

5 The school bus makes three round trips each day. How many round trips does the bus make in 260 days?
A   263
B   520
C   680
D   780
E   980

6 Bill weighs 109 pounds. George weighs 127 pounds. How many pounds difference is there in their weights?
F   18
G   20
H   28
J   118
K   136

7 Ellen bought a ball for $0.15 and a book for $0.25. How much change did she get from $1.00?
A $0.10
B $0.40
C $0.60
D $0.70
E $0.85

8 Bill bought 3 pounds of bananas at 8 cents per pound. Which one of the following groups of coins would be the right amount to pay for the bananas?
F   1 dime, 2 nickels, 4 pennies
G   1 quarter, 4 pennies
H   2 dimes, 1 nickel, 4 pennies
J   2 dimes, 2 nickels, 4 pennies
K   3 dimes, 4 pennies

9 Sue weighs 92 pounds. Kate weighs 97 pounds. When Sue held her pet puppy and stood on the scales, they showed the same weight as for Kate. How many pounds did the puppy weigh?
A   There is no way to tell because the puppy was not weighed.
B   5
C   7
D   92
E   97

0 Mary found some buttons that cost 10 cents for 3 buttons. At this price, how many buttons can she buy for 80 cents?

F 8
G 24
H 30
J 73
K 80

1 On a week-end trip George and his father drove 97.3 miles on Friday, 104.8 miles on Saturday, and 124.6 miles on Sunday. How many miles did they drive on the whole trip?

A 215.7
B 226.7
C 326.7
D 2157
E 3667

2 A half-pint is related to a pint the way a

F pint is related to a quart
G pint is related to a gallon
H quart is related to a gallon
J pint is related to a half gallon
K quart is related to five gallons

3 Janet's mother bought $\frac{1}{2}$ of a quart of peach ice cream and $1\frac{1}{2}$ quarts of chocolate ice cream for Janet's party. How many quarts of ice cream did she buy in all?

A $\frac{3}{4}$
B 1
C 2
D 3
E 4

14 What part of the rectangle is shaded?

F $\frac{1}{4}$
G $\frac{1}{3}$
H $\frac{3}{8}$
J $\frac{3}{5}$
K $\frac{5}{8}$

15 On a certain map 2 inches stands for one mile. How many inches on the map would stand for a distance of 10 miles?

A 5
B 8
C 10
D 15
E 20

16 John saves 10 cents a week. Susan saves 15 cents a week. At this rate, after how many weeks will Susan have saved 5 times as much as John?

F 1
G 2
H 3
J 5
K Never

17 Philip had $\frac{3}{4}$ of a gallon of gas. If he used $\frac{1}{2}$ of a gallon in his model plane, how many gallons of gas did he have left?

A $\frac{1}{4}$
B $\frac{1}{3}$
C $\frac{3}{8}$
D $\frac{1}{2}$
E $1\frac{1}{4}$

Go on to the next page.

AT—5A

18 Mr. Clark drove his car 1212 miles last year. How many miles on the average did he drive his car each month?

F 11
G 101
H 121.2
J 1200
K 1212

19 The Riley family uses 4 eggs each day. How many days will 3 dozen eggs last the Riley family?

A 4
B 9
C 12
D 36
E 40

20 Betty and Carol are making dresses for their dolls. Betty bought $\frac{3}{4}$ of a yard of material and Carol bought $\frac{1}{2}$ of a yard of material. How many yards of material did the girls buy altogether?

F $\frac{2}{3}$
G $\frac{5}{6}$
H 1
J $1\frac{1}{4}$
K $1\frac{2}{3}$

21 Bill's mother planned to use up a big cake at her son's birthday party by cutting equal pieces for his 20 friends. It rained that day and only 10 children were at the party. Bill's mother still planned to use up the whole cake by cutting equal pieces for the 10 children instead. This meant that each serving was

A two times as large as she had planned
B one-fourth as large as she had planned
C one-half as large as she had planned
D four times as large as she had planned
E unequal in size

22 John is in school every weekday from 8:30 a.m. until 2:45 p.m. How many hours does he spend in school each day?

F $5\frac{1}{4}$ **G** $5\frac{3}{4}$
H 6   **J** $6\frac{1}{4}$
K $7\frac{1}{4}$

23 Susan knows the cost of $\frac{1}{3}$ yard of ribbon. To find the cost per yard, she should

A add $\frac{1}{3}$ three times
B subtract $\frac{1}{3}$ from the cost per yard
C multiply the cost of $\frac{1}{3}$ yard by three
D divide the cost per yard by $\frac{1}{3}$
E divide the cost of $\frac{1}{3}$ yard by three

24 Bill and Sarah had a bicycle race from one town to another. Bill took one hour and twenty minutes. Sarah took 80 minutes. Bill's speed was

F $\frac{4}{3}$ of Sarah's speed
G $\frac{3}{2}$ of Sarah's speed
H $\frac{3}{4}$ of Sarah's speed
J $\frac{2}{3}$ of Sarah's speed
K the same as Sarah's speed

25 A boy scout first walked 5 miles east and then 10 miles west. How many miles and in what direction should he walk to get back to his starting point?

A 5 miles east
B 5 miles west
C 15 miles east
D 15 miles west
E He is already at his starting point.

If you finish before time is called, check your work on this part. Do not go back to any previous part.

Cooperative

Sequential
Tests of
Educational
Progress

Listening

(ETS)

General Directions

This is a test of how well you can understand the kinds of things that are often spoken aloud to you. You should take the test in the same way that you would work on any new and interesting assignment. Here are a few suggestions which will help you to earn your best score.

1. Make sure you understand the test directions before you begin working. You may ask any questions about any part of the directions you do not understand.

2. You will make your best score by answering *every* question because your score is the number of correct answers you mark. If a question seems to be too difficult, make the most careful guess you can, rather than waste time puzzling over it.

IRECTIONS FOR PART ONE

number of short selections will be read aloud
you. These selections will include such
ings as stories, directions, poems, explana-
ns, and arguments. After each selection, you
ill hear a group of questions or incomplete
atements. Four suggested answers are given
r each question or incomplete statement. You
e to decide which one of these answers is best.

emember to listen carefully because each se-
ction and each question will be read aloud
nly once and they are NOT printed in your
st booklet. The suggested answers ARE
rinted in your test booklet so you can look at
em while you are choosing your answer.

ou must mark all of your answers on the sepa-
ate answer sheet you have been given; this test
ooklet should not be marked in any way.
Mark your answer sheet by blackening the
pace having the same letter as the answer you
ave chosen. For example, suppose the follow-
ig selection and question were read to you:

Selection

he old man hurried back to his house, and his
ind was full of many things. When he sud-
enly saw a fat, yellow cat sitting in his best
rmchair, he could only stand there rubbing
is eyes and wondering whose house he was in.

Question Number 0

When the old man saw the yellow cat in his best
armchair, how did he feel?

Your test booklet would look like this:

0 **A** Pleased
   B Surprised
   C Sad
   D Angry

Since the old man was surprised to see the cat,
you should choose the answer lettered **B**. On
your answer sheet, you would first find the row
of spaces numbered the same as the question—
in the example above, it is **0**. Then you would
blacken the space in this row which has the
same letter as the answer you have chosen. See
how the example has been marked on your an-
swer sheet.

Make your answer marks heavy and black.
Mark only one answer for each question. If
you change your mind about an answer, be sure
to erase the first mark completely.

PART ONE

1   A   only when a real fire breaks out
      B   whenever the fire bell sounds
      C   only when the teacher announces a fire
         drill
      D   whenever the firemen come

2   E   go right home without waiting
      F   go as far from the building as possible
      G   go to the left corner of the playground
      H   go to the far end of the block

3   A   save our lives
      B   memorize them
      C   make up others
      D   help the firemen

4   E   To have more chance for exercising
      F   To get a better view of the fire
      G   To use their regular play space
      H   To be out of danger

5   A   any fire exit
      B   the door on the south
      C   the hallway to the right
      D   the nearest fire exit

6   E   take nothing with you
      F   take your lunch with you
      G   take your coat with you
      H   leave your desk neat and clean

7   A   the signal is given
      B   the whistle blows
      C   one of the children tells you to return
      D   you think everyone is out of the building

8   E   it is easier for all to come in at one time
      F   it might bother the firemen
      G   the building might be on fire
      H   the teacher doesn't want pupils in the
         building

9   A   a dealer in antiques
      B   a postman
      C   a dealer in stamps
      D   a coin collector

10   E   she wanted to find out how much each
        one was worth
      F   her friend had recommended him
      G   she wanted to sell all the stamps to him
      H   she wanted him to find one valuable
        stamp

11   A   be polite to the old lady
      B   see which ones he liked
      C   see how much they were worth
      D   see how many there were

12   E $100 for all of them
      F $100 for one of them
      G $250 for all of them
      H $250 for one of them

13   A   All of them
      B   Many of them
      C   About half of them
      D   A few of them

14   E   after he examined the stamps
      F   after he talked with his partner
      G   after he bargained with the lady
      H   after he waited a week

15   A   disappointed by the amount of the check
      B   pleased by the amount of the check
      C   sad about selling the stamps
      D   unwilling to part with the stamps

16   E   put them away in a shoe box
      F   take them to a different dealer
      G   bring them to this dealer
      H   show them to her friend

7 **A** A sad feeling
  B A relaxed feeling
  C A proud feeling
  D A feeling of doubt

8 **E** to explain democracy to people in other countries
  F to tell us not to be ashamed of the flag
  G to get more people to salute the flag
  H to remind us of what our flag represents

9 **A** What the stars on our flag represent
  B That children say the pledge to the flag every day
  C What the pledge to the flag really means
  D How new citizens learn the pledge to the flag

20 **E** have risked their lives for our flag
  F remember the thirteen original states
  G stand at attention for the flag
  H put our flag up on holidays

21 **A** the color of the flag
  B the serious promises he makes
  C how the flag is displayed
  D how many people salute the flag

22 **E** gold is the best treasure
  F bluebirds have shining feathers
  G small boys treasure many things
  H many lands have riches

23 **A** almost anything may be precious
  B things swapped are most treasured
  C only bright things are attractive
  D a hunt for gold is most exciting

24 **E** how foolish the child was
  F what adults think valuable
  G that faraway things are better
  H ways to get rich

25 **A** telling the things he collects
  B using big words
  C telling how the boy looked
  D laughing at what he collects

26 **E** in a box or bag
  F in a cup or carton
  G in his hand or pocket
  H in his lunch pail or basket

27 A "What Happens to Old Ships?"
    B "A Famous Old Barn"
    C "A Ship and a Barn"
    D "What Became of the Mayflower?"

28 E Plymouth Rock is in England.
    F The ship was built there.
    G Mayflowers grow in England.
    H A farmer from Buckinghamshire bought the wood.

29 A The way the facts fit together
    B The barn that is still standing
    C The information from detectives
    D The dates given

30 E talking about the Pilgrims
    F giving you several facts
    G describing the barn
    H telling you he believes it

31 A put several clues together
    B ask questions
    C read old tax reports
    D show confidence in one's beliefs

32 E baking it in an oven
    F polishing it with steel wool
    G scrubbing it with paint cleaner
    H drying it two days

33 A it is a bright color
    B it fits into most color schemes
    C it is cheaper than other paints
    D it is easier to use

34 E from upholstery or wallpaper
    F from a painting book
    G from other trays
    H from magazine covers

35 A they are long and detailed
    B the trays will be pretty
    C the words are easy
    D they give the steps in order

36 E To enjoy the painting
    F To make inexpensive gifts
    G To practice making designs
    H For all of these reasons

7 A noticed the poison ivy growing there
   B found hoof prints at the stream crossing
   C watched the birds fly past
   D found broken sticks at the stream cross-
      ing

8 E is not far from the main road
   F seems depressing to people
   G is along a well-beaten path
   H probably has few human visitors

9 A sees a great deal when he goes into the
      woods
   B has difficulty in describing what he sees
   C does not often get to the woods
   D lives in a log cabin

0 E His regret about the poison ivy
   F His curiosity about the woods
   G His hope that he will see the deer
   H His enjoyment of a beautiful place

   End of Part One

DIRECTIONS FOR PART TWO

Part Two contains the same kind of material as Part One.   Mark your answers in the same way.

PART TWO

1
  A a baking pan
  B an electric toaster
  C an oven
  D a frying pan

2
  E an egg mixture
  F honey, syrup, or marmalade
  G red raspberry jam
  H bacon and eggs

3
  A how many it will serve
  B how many eggs to use
  C the length of time for browning the bread
  D how much sugar to use

4
  E it is a different kind of toast
  F it is a familiar kind of toast
  G it is made from brown bread
  H it can be made ahead of time

5
  A milk to use
  B orange rind to use
  C bread to use
  D butter or margarine to use

6
  E don't have enough time to make regular toast
  F want a change from regular toast
  G are getting your own breakfast
  H have lots of orange juice on hand

7
  A "Several Varieties of Toast"
  B "French Toast"
  C "A Good Breakfast"
  D "Orange Toast"

8
  E The comfort of the chair
  F The fever from measles
  G The pictures on the walls
  H The dust in the sun's rays

9
  A an elf dancing
  B a fairy castle
  C a tiny fairy
  D a tin soldier

10
  E danced gaily
  F kept still
  G changed size
  H fell down

11
  A Another took its place.
  B He didn't like it.
  C He liked dancers best.
  D He wanted to look outdoors.

12
  E His mother called him.
  F He went back to bed.
  G The sun went down.
  H He got tired of playing.

13
  A stars
  B candles
  C fireflies
  D flames

14
  E have been very sick
  F be a very lonely child
  G have a good imagination
  H have had the measles

15
  A traveled a lot
  B had nightmares
  C been very sick
  D read many books

6
 E 6
 F 11
 G 17
 H 20

7
 A tell her dad how much things cost
 B ask her parents to let her go to work
 C tell about her friends' allowances
 D get more spending money

8
 E no good reasons
 F no reasons at all
 G reasons that seemed good to her
 H reasons that were well organized

9
 A "Sue gets twice as much."
 B "I'm the only one who has so little money."
 C "I'm asking just one simple favor."
 D "I'll promise to save all I can."

10
 E Yes, and she went at it in the right way.
 F Yes, but she should have let them say something.
 G No, but she gave a good speech just the same.
 H No, but she had to express her feelings to someone.

21
 A "The Log Jam"
 B "The Hungry Boy"
 C "A Narrow Escape"
 D "Catching Cold"

22
 E completely covered with logs
 F almost covered with logs
 G calm water
 H jammed with ice

23
 A a long pole
 B a flashlight
 C a loop of wire
 D a coil of rope

24
 E hurt herself
 F had a chill
 G recovered from worry
 H been very angry

25
 A tying the logs together
 B keeping the logs the way they were
 C separating the logs
 D knocking the logs down

26
 E what Mikael was going to do when he reached home
 F what Mikael's father said to him about his disobedience
 G what caused the accident
 H how his mother felt

27 **A** show that she could
B get even with Sally
C be at the top of her class
D try to improve her grade

28 **E** Sally's paper was easy to see.
F The teacher had left the room.
G Sally offered her the answer.
H She could peek at her book.

29 **A** Her dislike of cheating
B Her fear of being found out
C Her understanding of her father's feelings
D Her desire to make good grades

30 **E** Proud of herself
F Ashamed of herself
G Afraid of the teacher
H Nervous and uneasy

31 **A** When you heard the last sentence
B When Nan thought of cheating
C When Nan picked up her pen
D When the bell rang

32 **E** Yes, because how else could we have gotten the story.
F Yes, because children are often tempted to cheat in school.
G No, because it was in a story.
H No, because no child would act as Nan did.

33 **A** You should study hard for tests.
B Good grades are more important than honesty.
C Cheating is wrong if you get caught.
D You feel good when you decide to do right.

34 **E** it was Safety Week
F children had been hurt in accidents
G equipment had been damaged
H pupil helpers were to be trained

35 **A** That the children were not having fun there
B That things were all mixed up on the playground
C That the school owned too much playground equipment
D That the children were probably not getting enough exercise

36 **E** show directions
F separate boys and girls
G show where to play each game
H show where to park bicycles

37 **A** the requests of the principal
B his own opinion
C the request of parents
D the decision of the council

38 **E** was a poor one
F was worth trying
G should be voted on
H needed more explanation

39 **A** Yes, because he made the plan sound as if it would work
B Yes, because he gave a nice long speech about what happened
C No, because he made the problem seem much worse than it is
D No, because he made fun of the first graders

40 **E** Look out for smaller children.
F Check out any equipment.
G Bring play equipment from home.
H Suggest any new ideas.

End of Test

Form **4** A

Cooperative

Sequential
Tests of
Educational
Progress

Reading

ES Cooperative Test Division · Educational Testing Service · Princeton, N.J. · Berkeley 4, Calif.

General Directions

This is a test of some of the understandings, skills, and abilities you have been developing ever since you first entered school. You should take the test in the same way that you would work on any new and interesting assignment. Here are a few suggestions which will help you to earn your best score:

1. Make sure you understand the test directions before you begin working. You may ask questions about any part of the directions you do not understand.

2. You will make your best score by answering *every* question because your score is the number of correct answers you mark. Therefore, you should work carefully but not spend too much time on any one question. If a question seems to be too difficult, make the most careful guess you can, rather than waste time puzzling over it.

3. If you finish before time is called, go back and spend more time on those questions about which you were most doubtful.

DIRECTIONS FOR PART ONE

Each of the questions or incomplete statements in this test is followed by four suggested answers. You are to decide which one of these answers you should choose.

You must mark all of your answers on the separate answer sheet you have been given; this test booklet should not be marked in any way. You must mark your answer sheet by blackening the space having the same letter as the answer you have chosen. For example:

O Which one of the following is an animal?
  A Bed
  B Dog
  C Chair
  D Box

Since a dog is an animal, you should choose the answer lettered **B**. On your answer sheet, you would first find the row of spaces numbered the same as the question—in the example above, it is **O**. Then you would blacken the space in this row which has the same letter as the answer you have chosen. See how the example has been marked on your answer sheet.

Make your answer marks heavy and black. Mark only one answer for each question. If you change your mind about an answer, be sure to erase the first mark completely.

PART ONE

(1) It was on a trip with the wagon train that William first saw Indians on the warpath. Over the hills they came, their feathers waving in the wind. They held their tomahawks over their heads and gave great yells as they rode. They rode in circles around the wagons—each circle growing smaller and bringing the Indians closer to their prey.

(2) The white men aimed and fired. They drove the Indians away, but knew that the red men would return. The oxen were hitched quickly to the wagons. Whips cracked! Wheels began to move! The great train was on its way.

(3) William ran behind the wagon with some of the men. He became very tired, and his feet felt so heavy he could hardly make them carry him forward. Try as he would to keep up, he got farther and farther behind.

(4) Suddenly he heard a noise, and looking up, he saw the cruel face of an Indian. William was frightened, but he remembered what he should do. He raised his gun and fired. A loud whoop rang out as the Indian came tumbling down. The men of the wagon train heard the shot and the whoop. They came running to help William, but the boy needed no help. He had known how to help himself.

1 In this story the writer wants to show that
   A the Indians were brave
   B William could help himself
   C William could not walk fast
   D the men helped William

2 The writer thought that
   E Indians were poor riders
   F Indians were braver than white men
   G the Indians were afraid of William
   H Indians were dangerous

3 How did the story say William felt when he met the Indian alone?
   A Frightened
   B Angry
   C Happy
   D Sorry

4 Why does this story need the third paragraph?
   E So you will know that William was brave
   F To show how fast the train was moving
   G So you will know why William had to shoot the Indian himself
   H To show you that the men were running away from the Indians

5 This is a good story because
   A it teaches you all about Indians
   B it teaches you how to shoot Indians
   C it shows how frightened the white men were
   D it is very exciting

THE HENS

The night was coming very fast;
It reached the gate as I ran past.

The pigeons had gone to the tower of the church,
And all the hens were on their perch,

Up in the barn, and I thought I heard
A piece of a little purring word.

I stopped inside, waiting and staying,
To try to hear what the hens were saying.

They were asking something, that was plain,
Asking it over and over again.

One of them moved and turned around,
Her feathers made a ruffled sound,

A ruffled sound, like a bushful of birds,
As she said her little asking words.

She pushed her head close into her wing.
But nobody answered anything.

6 What sound that hens make does the poet tell you about?
   E Ruffling
   F Cackling
   G Crowing
   H Scratching

7 What does the poet make believe the hens are doing?

A Going to sleep
B Asking little questions
C Moving and turning around
D Sitting on their perches

8 Where did the pigeons sleep?

E In the barn
F With the hens
G In the church tower
H On their perches

9 At the end of the poem, the poet is

A in the church
B remembering the gate
C leaving the tower of the church
D looking at just one hen

10 The person in the poem will never

E know what the hen really meant
F visit the hens again
G run past the gate
H stop in the barn again

Let's Play Indoor Horseshoes

This exciting indoor game is played somewhat like horseshoes. Instead of real horseshoes, however, you use two men's shoes and a supply of pop-bottle tops. Any number of people can play the game.

Borrow a pair of dad's old shoes and place them at one end of the room, side by side. The toes should be pointing away from the wall. Each player has two bottle tops which he should mark with his initials so he can be sure to recognize them.

Players take turns trying to pitch their two bottle tops into the shoes from a distance of about six feet. To make sure everyone stands the same distance away, you can place a small object on the rug to mark the spot where the player stands. After everyone has had a turn, here is how you score the game.

A bottle top inside a shoe is called a "ringer." It counts five points. A bottle top touching a shoe is called a "leaner" and counts three points. If there are no ringers or leaners, the person whose bottle top is closest to a shoe gets one point. If his other bottle top is also closer to a shoe than any of his opponents' tops, he scores two points.

After the scores have been written down, players pick up their bottle tops and take turns pitching again. The first person to reach 21 is the winner.

11 When playing this game, you must first

A choose up sides, then pitch
B place the shoes, and mark the spot where the players stand
C make everyone stand the same distance away
D score the points after each player's turn

12 A player gets a score of two points if

E both his tops are closer to a shoe than any other tops
F he gets a ringer
G he gets a leaner
H one of his tops touches some other player's top

13 A "leaner" is

A a player who leans over to pitch the bottle top
B someone who is playing for the first time
C a bottle top that leans against another top
D a bottle top that touches a shoe

14 The writer of this story is trying to tell you how to

E play a new game
F play a game with horseshoes
G win a game
H beat the other fellow at horseshoes

15 The writer does NOT tell you

A whether players take turns
B how to score the game
C what to do when there is a tie
D where to place the shoes

(This is a letter written by a child to his pen pal in another part of the country. Pen pals are people who have never met each other, but who write letters to each other.)

Dear Pen Pal,

I have two little sisters. Kathy Ann is 5 years old and Myra is 1½.

We have a canary. His name is Chris. He is supposed to be a singer, but he doesn't sing pretty. But he is a cute pet. We leave his cage door open on the back porch some days and he flies around in the porch. Some days he comes into the kitchen and eats lettuce, celery leaves, turnip greens, and the leaves of Mother's flowers. He sometimes takes a bath in the dishpan and sometimes in the fish bowl with the two gold fish. One day while we were eating lunch he flew to the table and stood on the side of the bowl of potato salad. He usually lets Mother catch him when she wants to. He goes into his cage by himself at night.

<div align="right">Your friend,
Larry Arnold</div>

16 What can you guess about mother when she tries to catch Chris?
E She can never catch him.
F She always needs help from Larry.
G Sometimes she can't catch him.
H She can always catch him.

17 What was Larry doing when Chris stood on the salad bowl?
A Feeding the fish
B Eating lunch
C Feeding his younger sister
D Bathing Chris

18 How does the bird sleep in his cage at night?
E On his perch
F On the bottom of the cage
G With his head under his wing
H The letter doesn't tell us.

19 The second paragraph in the letter is mostly about
A the canary
B the goldfish
C the sisters
D pen pals

20 Why does Larry tell about the dishpan and the fish bowl?
E They are things that are hard to keep clean.
F They are funny places for a canary to be.
G Chris sang only in them.
H Chris always ate in them.

What a bustling place is a modern railroad yard with its scores of tracks and switches and hurrying workers! There are storage tracks for incoming freight, tracks for sorting freight, and tracks on which trains which are to go to other cities are made up. To us it looks like a hopeless puzzle as cars are moved backward and forward and from one track to another, but it is really an orderly job, carefully planned by the yardmaster and the switchmen. The "empties," as the empty freight cars are called, are put in one place. The loaded cars are sorted according to the place they are going and whether they are to travel by fast or slow freight. Hour after hour the work goes on until all the cars are on the right tracks; meanwhile more trains are arriving to keep the process going. Trains come rumbling into some yards at the rate of one every ten minutes, so there is no time to rest. If the work in the yards did not go on, soon every track would be jammed so full that nothing could move. Some trains must pull out so that the others can pull in.

There are also the problems of getting borrowed cars returned to their own railroads and loading them whenever it is possible. There must be no "empties" standing around on their own tracks, for empty freight cars mean money lost. Surely a yardmaster must have a very wise head, and capable men to help him, to keep everything running smoothly.

21 At the beginning of the story, the writer tells us

A that trains make a lot of noise
B mostly about empty cars
C that a railroad yard is a busy place
D that empty cars mean lost money

22 Trains are allowed to enter the yard

E only after other cars are on the right track
F all the time
G when the men begin work in the morning
H every half hour

23 Cars are sorted according to

A size
B whether the freight will spoil
C where they are going
D what time they came into the yard

24 One title for this article might be "Freight Cars." A better title would be

E "The Yardmaster's Job"
F "Where Freight Cars Go"
G "The Problem of Empty Cars"
H "How Freight Cars Are Stored"

25 When the writer says "hour after hour the work goes on" (line 15), he wants us to think that

A one car moves every hour
B the switchmen wait a long time for the trains
C most of the work is done at night
D men in the yard work all the time

A SAFETY PLAY

1 DOCTOR: Good morning, Nurse. Have any
   children come to our school clinic today?
   NURSE: None so far, Doctor.
   DOCTOR: No colds, no sniffles,
5   No measles, no mumps?
     No scratches, no bruises,
     No scrapes, no bumps?
   NURSE (*shaking her head*): But, with all the care-
     less children we have in this school, we shall
10   probably have some accident cases to patch
     up before the day is over.
   DOCTOR: Well, I'll be in my office if anyone
     needs me. (*goes out*)
   GENE (*enters, left*): Oh dear, oh me!
15 NURSE: What happened to you?
   GENE: I'm nothing but a mass of burns.
     Both hands are red and sore.
     I lit a match near some old trash
     Down on the basement floor.
20 NURSE: Hereafter, never play with matches!
     And always keep the basement cleared of
     trash. Go in to see the doctor, and he will
     fix you up. (*Gene goes out, right*)
   CAROL (*comes in, left*): Oh, oh, this is dreadful!
25 NURSE: What happened to you?
   CAROL: I slid upon a cake of soap
     In the bathroom tub today,
     And now I have so many hurts
     That I can't work or play.
30 NURSE: After this, never leave soap in the tub
     or on the floor of a shower. Now go in to
     see the doctor, and he will fix you up. Then
     come back to see me.
     (*Carol goes out, right*)
35 NURSE: They really are a sorry lot,
     And all because each one forgot.
   TOGETHER: We've given you these safety tips,
     And hope you'll be the gainer.
     If you'll just follow them at home,
40   Your life will be much saner.
     This is the end of our play, friends.
     We wish you joy and laughter.
     We hope you'll keep the rules, and live
     Happily ever after!

26 What happened to Gene in the play?
   E He had burned his hands.
   F He had fallen downstairs.
   G He had fallen in the bathtub.
   H He had hurt himself on the playground

27 Why didn't the play tell what school th
   was or how old the children were?
   A It does tell these things.
   B It would give the school a bad name.
   C You don't need to know these things t
     understand the play.
   D The play was not in a school.

28 The writer of this play wants most for yo
   to
   E have a nurse and doctor in your schoo
   F be more careful
   G go to the doctor when you are hurt
   H make up more safety rules

29 In lines 8 and 14, what do the words b
   tween these marks ( ) tell you?
   A What the person is doing
   B What the person said
   C Who is talking
   D None of the above

30 The play makes you think that Carol an
   Gene
   E were very nice children
   F were brother and sister
   G were very young children
   H were not very careful

How A Camera Operates

A camera works very much like the human eye. The light from an object—a tree for example—first enters the human eye through a tiny lens in front of the eye. This lens focuses an image of the tree on the back of the eye, where a bundle of little nerves carries the image to the brain. A camera also has a lens in front. If the camera is pointed at a tree, the lens will focus an image of the tree on the back of the camera where the film is placed. When the film is developed and printed, the finished product is called a photograph. The word "photograph" comes from the Greek *photos* (a form of the word meaning "light") and *graphe* (meaning "writing"). Photography is exactly that—writing (or drawing) with light.

Here is a simple experiment that will show you clearly how a camera operates. Take off the back of your camera. Then use a rubber band to hold a piece of tissue paper across the open back of your camera. Close the shutter, throw a dark cloth over your head, open the shutter, then point the lens of the camera at a well-lit scene. The light reflected from the scene passes through the hole and throws a picture of the scene on the tissue paper. The rays of light cross as they pass through the hole. This makes the image upside down when it strikes the paper. The image in the human eye is formed the same way.

31 The best title for this selection would be
  A "The Human Eye is a Camera"
  B "How a Camera Operates" (as it is now)
  C "How to Build a Simple Camera"
  D "Experimental Photography"

32 When does the writer compare the eye and the camera?
  E While he is describing the experiment
  F Throughout the article
  G Mostly toward the end of the article
  H At the beginning and at the end of the article

33 The article says that before putting the tissue paper on the camera, one should
  A point the camera at a scene
  B open the shutter
  C take off the back
  D close the shutter

34 The writer tells us the meaning of the Greek words *photos* and *graphe* because
  E he wants us to be interested in Greek
  F they show that the eye is really a camera
  G they make the experiment easier to do
  H they help explain how pictures are taken

35 Which of the following is NOT explained in the article?
  A How to do an experiment with a camera
  B Why a dark cloth is necessary
  C How the camera and the eye are similar
  D Why the image on the paper is upside-down

STOP Stop. If you finish before time is called, check your work on this part. Do not go on to Part Two until you are told to do so.

DIRECTIONS FOR PART TWO

Part Two contains the same kind of material as Part One. Mark your answers in the same way.

Do not turn this page until you are told to do so.

PART TWO

Trees are big plants. They grow from seeds.

A tree has many parts. It has a trunk. The trunk is the biggest part of a tree.

A tree has branches. Some of the branches are big. Some of the branches are little.

A tree has leaves. In summer, tree leaves are green. In autumn, some leaves turn red and yellow.

Some tree leaves fall off in autumn. They fall off when the tree stops growing. The tree stops growing when it cannot get enough water.

We cannot see all of a tree. We cannot see the roots of a tree. The roots are under the ground.

A tree has many roots. It has almost as many roots as it has branches. The roots get water for the tree. They also get something from the soil with which the tree makes food. The water and food make the tree grow. The roots also keep the tree from blowing over.

Trees are beautiful. They help make school grounds and houses look pretty.

Trees make shade in the summer. They shade your house. They keep your house cool. They keep you cool, too.

1 This story is all about
A branches
B trees
C roots
D school grounds

2 We like trees because
E they are big
F they grow big and tall
G they have leaves
H they are beautiful

3 The parts of a tree are talked about in this order:
A leaves, branches, trunk, roots
B trunk, branches, leaves, roots
C roots, trunk, branches, leaves
D branches, leaves, roots, trunk

4 In the last part of the story, we are told about
E how trees help us
F a tree in the forest
G a branch on a tree
H how trees lose leaves

5 This is a good story because it tells us
A about animals
B that we see the whole tree
C a lot about trees
D that trees are good food

Dear Bill,

It was fun to be on the farm. Yesterday morning, Jack and I watched Aunt Mary make butter. She did not need to use all her cream to make butter. She sent most of the cream to the creamery.

I wish I were a farmer. I would take just a little cream for butter. Then I would use all the rest of the cream to make ice cream. Wouldn't that be fun?

I'm sorry you could not go to Jack's farm with me. I had the time of my life. Every day, Jack kept finding some new thing to do.

We rode Jack's horse. We worked around the barn. We fed the animals. We gave corn to the hogs in their pen. What a noise a hog can make! We gave hay to the horses and the sheep and the little lamb.

I came back to town yesterday. I must say good-by for now. Write soon.

Your cousin,
Betty

6 In this letter, Betty is trying to tell
E how to make butter
F what she did at the farm
G what horses eat
H how much noise a hog makes

7 In the first part, Betty tells about
A how the creamery makes butter
B Betty and Jack making butter
C where cream comes from
D Aunt Mary making butter

8 Which of these things that Betty said tells best how she feels about living on a farm?

  E We worked around the barn.
  F I came back to town yesterday.
  G I wish I were a farmer.
  H We rode Jack's horse.

9 The letter is happy EXCEPT where Betty is

  A saying Bill couldn't come
  B telling about riding the horse
  C having to say good-by
  D telling about the cream

10 Where does Betty live?

  E In the mountains
  F On a farm
  G Near the ocean
  H In a town

MY BROTHER, JOHN HENRY

I have such a wonderful brother.
John Henry is his name.
Whatever I want to play, he'll play;
He likes just any old game.

If we decide on a game of ball,
John Henry lends his bat;
And if it's marbles, he'll lend those, too.
John Henry's just like that.

Whenever I say, "Let's go to the creek
And catch the tadpoles there,"
He goes along and helps dam them in,
Ready to do his share.

If I decide to sit and rest,
Just watch the sun on the grass,
He'll sit with me there and talk and talk,
Helping the time to pass.

We tell each other exciting tales
Of pirates bold at sea.
It's my turn first. I talk a while;
Then John tells tales to me.

Now whoever saw a boy like this,
So good, with manners mild?
No one has seen him. I made him up,
For I am an only child.

11 John Henry and the poet seem to decide things

  A at different times
  B in different ways
  C together, easily
  D by fighting over them

12 John Henry will probably never

  E give the poet any help in fishing
  F lend the poet his bat
  G fight with the poet
  H lend the poet any marbles

13 John Henry likes

  A ball playing best
  B any game at all
  C fishing best
  D sitting best

14 The poet is trying to say that John Henry is

  E a perfect playmate
  F a dull person to be with
  G a fellow who must have everything his own way
  H a fellow who tattles

15 The poet tells you who John Henry *really* is in the

  A first verse of the poem
  B fourth verse of the poem
  C fifth verse of the poem
  D sixth verse of the poem

Everyone was talking at once and scrambling over everyone else, trying to find things. "Who did it?" they asked Miss Phillips.

"You did!"

"Oh, no, we didn't!" the children responded.

Miss Phillips nodded slowly and explained. "It's this way. You haven't done all these things at one time, but every one of you has done some of these things sometime, haven't you? Borrowed a pencil or book without permission, misplaced someone's wrap, mixed up someone's papers?"

The boys and girls looked thoughtful, for they, too, knew they had done these things.

They listened carefully as Miss Phillips went on: "You didn't notice when it was just one book or pencil. I wanted you to see what it would be like if everyone were careless all at once. After school I mixed up all your things to show what would happen if our room were like this all the time."

Everybody looked at everybody else. Finally David said, "We couldn't study."

And Jean added, "We wouldn't know where anything was."

"I wouldn't like it!" declared Ronald.

"Now you see why people have rules about property," Miss Phillips pointed out, "so perhaps we need a few rules in our class."

"I know!" called out Ricky. "Let other kids' things alone."

"Don't borrow without asking," said Jean.

And the school children decided never to have a mixed-up room again.

16 The children in the classroom
- **E** listened carefully as Miss Phillips explained the mix-up
- **F** were angry when they found out who had mixed up things
- **G** never found out who had mixed up things
- **H** didn't want to make any rules

17 What was the teacher trying to teach the children?
- **A** To stay in their seats most of the time
- **B** To be more careful about other persons' things
- **C** Not to borrow things from other children
- **D** Not to mix up the room again after school

18 How does the writer tell us this story?
- **E** By letting each person in the story tell his part
- **F** By telling it himself
- **G** By letting the teacher tell it
- **H** By none of the above

19 How did the story of the mixed-up room end?
- **A** The class talked about the mixed-up room.
- **B** The children straightened out everything.
- **C** The children told the teacher they were sorry.
- **D** The class made some rules so that things wouldn't get mixed again.

20 Which one of these rules did the children forget to make?
- **E** Let other children's things alone.
- **F** Don't borrow without asking.
- **G** Return something when you borrow it.
- **H** They remembered to make all the above rules.

The Railroad Ghost

It was a spooky sort of night. As the train raced along, fog began to close in around it. It was just the sort of night one would expect to meet a ghost.

Now, running a train isn't easy any time, but on this particular evening it was really hard work. Even with the powerful headlight stabbing the darkness ahead, the engineer had to strain his eyes to see the track.

Suddenly, dead ahead, a figure in a black cloak stood in the middle of the tracks waving its arms frantically! The engineer brought the express to a screeching halt. The trainmen searched and called. But there was no sign of the mysterious figure who had flagged their train. Even the engineer was almost convinced that it had been somebody's poor idea of a joke.

Just to play safe, he swung down from his cab and walked up the tracks. Suddenly, his face grew pale and his heart beat wildly. There, ahead of the stopped train, he found a washed-out bridge.

Not until the train reached London safely was the strange mystery solved. The engineer found a huge dead moth lying at the base of the locomotive head lamp.

Then he did a strange thing. He wet the wings of the moth and carefully pasted it to the glass of the head lamp. Then he climbed back into the cab of his engine and switched on the light.

"Ah!" he cried triumphantly. "I thought so!" For as the bright beam stabbed ahead into the darkness, there appeared once again the "ghost" the engineer had seen earlier. But now the "arms" weren't waving wildly. They were still.

21 In the first paragraph, the writer is trying to

A explain how the engineer feels

B give you a feeling for what is going to happen

C explain what a ghost is

D start you thinking about trains

22 This writer wants you to feel

E frightened

F happy

G sad

H angry

23 The mysterious figure seen by the engineer was

A a live person in a black cloak

B a dead person in a black cloak

C just imagined

D a moth's shadow

24 From this story we do NOT know

E how the engineer felt when he saw the washed-out bridge

F whether the train finished its journey

G how the bridge was fixed

H any of the above

25 How did the engineer find out who the mysterious stranger was?

A He pasted the moth on the light and turned the light on.

B He picked the moth up and studied it.

C He pasted the moth on the light.

D He pasted the moth on the light and it waved its arms.

Edison's Birthday Committee (sponsored by Edison Pioneers) has announced an Edison Essay Contest in honor of the great inventor's discovery of the first successful electric light.

The subject of the essay is "Why We Should Remember Edison's Birthday, February 11th." Essays of from 500–700 words may be entered by children in the 4th, 5th, 6th, 7th, and 8th grades and must follow the rules published by The Edison Birthday Committee. The completed essays will be submitted through teachers in schools that have registered with the Committee.

FIRST PRIZE
GOLD EDISON MEDAL AND
$500 U. S. SAVINGS BOND

The national winner will receive the Gold Edison Medal and a $500 U. S. Savings Bond. Presentation will be made at the luncheon meeting of Edison Pioneers to be held at the Waldorf-Astoria Hotel, New York, February 5. Winner and a parent or guardian will have expenses paid to West Orange, New Jersey, and New York City. *Children's Digest* will publish the winning essay in the July-August issue.

In addition to the Gold Edison Medal, four Silver Edison Medals will be awarded (by mail) to the authors of the four runner-up entries. In every participating school, a Certificate of Award will be given to the writer of the best essay in each of the five eligible grades. Essays must be mailed by the school to the Committee's judges before December 10. Winners will be announced January 20.

26 The purpose of the essay contest is
  E to award prizes for the five best essays
  F to present a birthday gift to Edison
  G to collect essays about Edison's birthday
  H to honor the man who made the first electric light

27 You can tell that the first prize will be given before Edison's birthday because the announcement
  A says so in the second paragraph
  B gives both the date of the award and the birthday
  C hints at it in the first paragraph
  D says so in the last paragraph

28 Why is the first prize described in capital letters?
  E The author wants schools to register.
  F It is more important than the subject of the essay.
  G People should buy savings bonds.
  H It is the most important prize.

29 How is a fourth-grade pupil likely to do in the contest?
  A He can't win; he is too young.
  B The rules are too hard for him.
  C He can win one of the prizes for his grade.
  D He can win a Certificate of Award only if he is brighter than the eighth-grade pupils.

30 The announcement does NOT tell us
  E whether teachers may help the pupils
  F how many prizes will be given
  G to whom the essays must be sent
  H how long the essays should be

Suddenly the whale opened its huge mouth. The creature made a queer rumbling, bubbling noise. A great grayish-white mass slid from his mouth, and floated slowly shoreward with the tide.

The whale shuddered. Then his great tail smacked the water, and his body seemed to lunge backward. He moved with surprising ease. Turning about, he headed out to sea. In another moment he disappeared, only to come up again much farther away. His spout shot up as if in farewell.

"Good-by, Mr. Whale!" Cal shouted. He turned to Uncle Gulliver triumphantly. "See, he just came back to say 'thank you' for getting the Coast Guard to haul him off the ledge yesterday. That noise he made was his way of saying 'good-by.' Hey! Uncle Gulliver! What you looking at? Where you going?"

But already Uncle Gulliver was far down the ledge, slipping and sliding in his haste.

Cal followed nimbly. He came up with Uncle Gulliver who was bending curiously over an unpleasant-looking mass of grayish waxlike stuff.

"Foo! That smells!" Cal pinched his nose. "What's that stuff?"

"That, my boy," said Uncle Gulliver, straightening up and turning a beaming face toward Cal, "is your whale's thank you. It's the biggest hunk of ambergris I've ever even heard of! That smelly mess right there is worth thousands of dollars," Uncle Gulliver declared. "I can hardly believe my eyes."

Cal snickered. "You're kidding."

"No! I'm serious!" Uncle Gulliver explained patiently. "A small quantity of this ambergris makes the odor stay in perfume. That's why perfume manufacturers are wild to get hold of ambergris. So when your whale bid you an affectionate good-by, he really left you a gift that's worth something!"

31 Cal thought the whale made a noise
  A to show his anger
  B to warn his audience
  C to say good-by
  D to get some air

32 The value of the whale's present is explained in
  E paragraph 1
  F paragraph 2
  G paragraph 5
  H paragraph 9

33 Paragraph 3 sounds as though Cal were
  A pleased
  B sorry
  C worried
  D disgusted

34 The story does NOT explain
  E why ambergris is used in perfume
  F why ambergris is so hard to get
  G why ambergris is worth so much money
  H where ambergris is to be found

35 The writer made the whale in this story seem
  A dangerous
  B stupid
  C clumsy
  D grateful

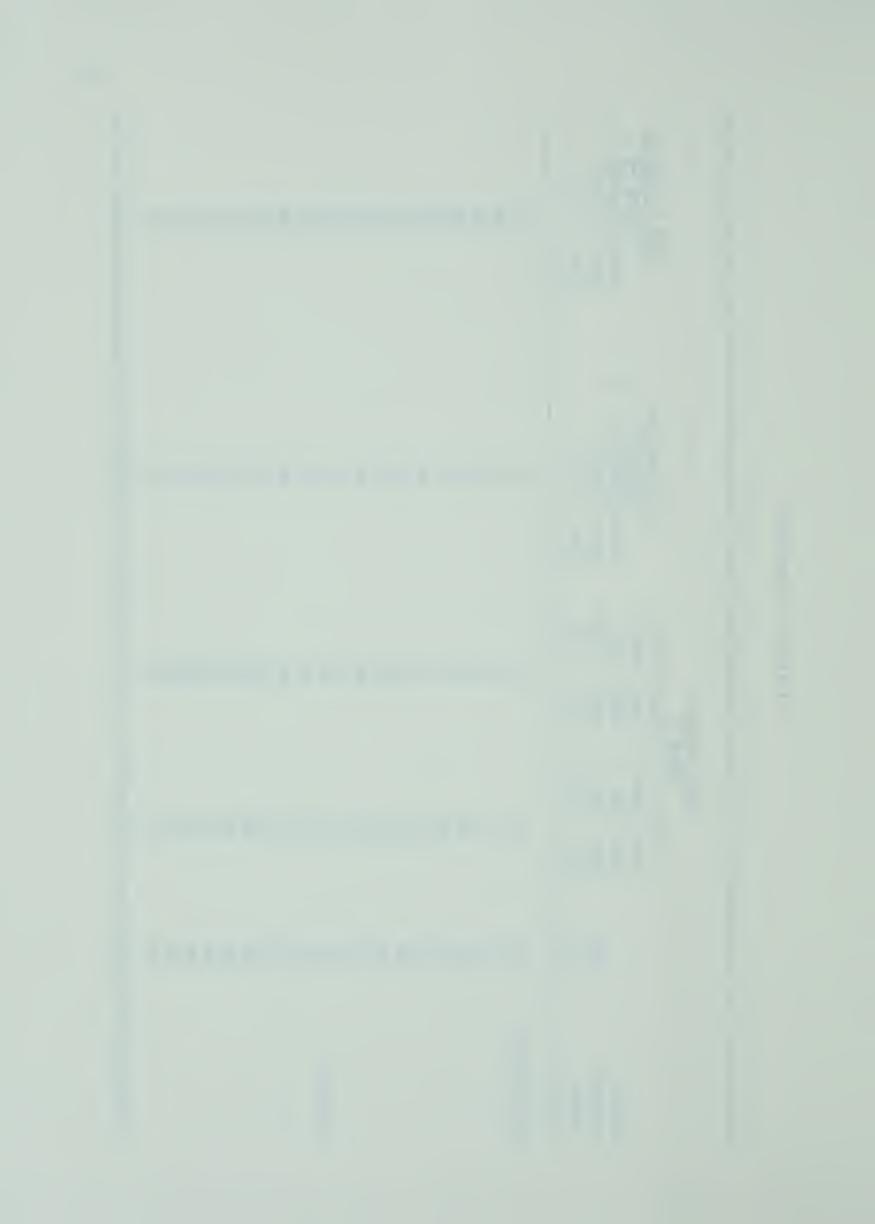If you finish before time is called, you may check your work on Part Two. Do not go back to Part One.

APPENDIX C

STANDARDIZED TEST SCORES

TABLE XIV

STANDARDIZED TEST SCORES

Socio-economic area	Pupil I.D.	SCAT Level 5 Form A Verbal Total possible - 50 Mean - 39.57 S.D. - 6.53	SCAT Level 5 Form A Quantitative Total possible - 50 Mean - 37.09 S.D. - 6.51	STEP Reading Form 4A Total possible - 70 Mean - 53.19 S.D. - 8.37	STEP Listening Form 4A Total possible - 80 Mean - 61.52 S.D. - 9.13
Professional	19	47	27	62	72
	16	45	36	56	64
	18	44	40	57	67
	20	44	35	60	68
	14	43	44	51	57
	17	41	33	60	63
	15	40	40	45	60
	12	39	46	61	60
	11	37	44	57	65
	13	37	24	45	69
Highly skilled	22	48	38	66	71
	28	48	40	56	68
	26	46	46	66	69
	27	46	45	60	69
	25	45	39	56	69
	24	43	38	61	63
	21	42	40	53	54
	23	39	43	43	55
	29	39	37	58	69
	30	37	38	60	62

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